inflation adjustment procedures prescribed in the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended:

Date of violation	Penalty
Violation occurring between Sept. 29, 1999 and Nov. 2, 2015	$11,000
Violation occurring after Nov. 2, 2015	19,639

(b) This remedy shall be in addition to any other remedy available under statutory or common law.

PART 2636—LIMITATIONS ON OUTSIDE EARNED INCOME, EMPLOYMENT AND AFFILIATIONS FOR CERTAIN NONCAREER EMPLOYEES

■ 5. The authority citation for part 2636 continues to read as follows:

Authority: 5 U.S.C. App. (Ethics in Government Act of 1978); Pub. L. 101–410, 104 Stat. 890, 28 U.S.C. 2461 note (Federal Civil Penalties Inflation Adjustment Act of 1990), as amended by Sec. 31001, Pub. L. 104–134, 110 Stat. 1321 (Debt Collection Improvement Act of 1996) and Sec. 701, Pub. L. 114–74 (Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015); E.O. 12674, 54 FR 15159, 3 CFR, 1989 Comp., p. 215, as modified by E.O. 12731, 55 FR 42547, 3 CFR, 1990 Comp., p. 306.

■ 6. Section 2636.104 is amended by revising paragraph (a) to read as follows:

§ 2636.104 Civil, disciplinary and other action.

(a) *Civil action.* Except when the employee engages in conduct in good faith reliance upon an advisory opinion issued under § 2636.103, an employee who engages in any conduct in violation of the prohibitions, limitations and restrictions contained in this part may be subject to civil action under 5 U.S.C. app. 504(a) and a civil monetary penalty of not more than the amounts set forth below, as adjusted in accordance with the inflation adjustment procedures prescribed in the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended, or the amount of the compensation the individual received for the prohibited conduct, whichever is greater.

Date of violation	Penalty
Violation occurring between Sept. 29, 1999 and Nov. 2, 2015	$11,000
Violation occurring after Nov. 2, 2015	19,639

* * * * *

[FR Doc. 2018–00688 Filed 1–16–18; 8:45 am]

BILLING CODE 6345–03–P

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

[NRC–2012–0059]

RIN 3150–AJ13

Approval of American Society of Mechanical Engineers' Code Cases

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is amending its regulations to incorporate by reference (IBR) the latest revisions of three regulatory guides (RGs) approving new, revised, and reaffirmed Code Cases published by the American Society of Mechanical Engineers (ASME). This action allows nuclear power plant licensees and applicants for construction permits, operating licenses, combined licenses, standard design certifications, standard design approvals and manufacturing licenses to voluntarily use the Code Cases listed in these RGs as alternatives to engineering standards for the construction, inservice inspection (ISI), and inservice testing (IST) of nuclear power plant components. These engineering standards are set forth in the ASME's Boiler and Pressure Vessel (BPV) Codes and ASME Operation and Maintenance (OM) Codes, which are currently incorporated by reference into the NRC's regulations. This final rule announces the availability of the final versions of the three RGs that are being incorporated by reference. Further, the final rule announces the availability of a related RG, not incorporated by reference into the NRC's regulations that lists Code Cases that the NRC has not approved for use.

DATES: This final rule is effective on February 16, 2018. The incorporation by reference of certain publications listed in the regulation is approved by the Director of the Federal Register as of February 16, 2018.

ADDRESSES: Please refer to Docket ID NRC–2012–0059 when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- *Federal Rulemaking Website:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2012–0059. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: *Carol.Gallagher@nrc.gov.* For technical questions contact the individuals listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.
- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at *http://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''*ADAMS Public Documents*'' and then select ''*Begin Web-based ADAMS Search.*'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, 301–415–4737, or by email to *pdr.resource@nrc.gov.* For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the ''Availability of Documents'' section.
- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Jennifer Tobin, Office of Nuclear Reactor Regulation, telephone: 301–415–2328, email: *Jennifer.Tobin@nrc.gov;* or Giovanni Facco, Office of Nuclear Regulatory Research, telephone: 301–415–6337; email: *Giovanni.Facco@nrc.gov.* Both are staff of the U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001.

SUPPLEMENTARY INFORMATION:

Executive Summary

The purpose of this regulatory action is to incorporate by reference into the NRC's regulations the latest revisions of three RGs. The three RGs identify new, revised, and reaffirmed Code Cases published by the ASME, which the NRC has determined are acceptable for use as alternatives to certain provisions of the ASME BPV Codes and ASME OM Codes, currently incorporated by reference into the NRC's regulations. The three RGs that the NRC is incorporating by reference are RG 1.84, ''Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,'' Revision 37; RG 1.147, ''Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,'' Revision 18; and RG 1.192, ''Operation and Maintenance Code Case Acceptability, ASME OM Code,'' Revision 2. This regulatory action allows nuclear power plant licensees and applicants for construction permits, operating licenses, combined licenses, standard design certifications, standard design approvals, and manufacturing licenses to voluntarily use the Code Cases, newly listed in these revised RGs, as

alternatives to engineering standards for the design, construction, ISI, and IST, and repair/replacement of nuclear power plant components. In this notice, the NRC also notifies the public of the availability of RG 1.193, ''ASME Code Cases Not Approved for Use,'' Revision 5. The regulatory guide lists Code Cases that the NRC has not approved for generic use, and will not be incorporated by reference into the NRC's regulations.

The NRC prepared a regulatory analysis (ADAMS Accession No. ML16285A013) to identify the benefits and costs associated with this final rule. The regulatory analysis prepared for this rulemaking was used to determine if the rule is cost-effective, overall, and to help the NRC evaluate potentially costly conditions placed on specific provisions of the ASME Code Cases, which are the subject of this rulemaking.

TABLE 1—COST-BENEFIT SUMMARY

Objective	Alternative 2—the rule alternative net benefits (costs) (net present value, 7% discount rate) ($ million)
Industry	2.42
NRC	2.52
Net Benefit	4.94

Table 1 summarizes the benefits and costs for the alternative of proceeding with the final rule (Alternative 2) and shows that the final rule is quantitatively cost-beneficial with a net benefit of $4.94 million to both the industry and the NRC when compared to the regulatory baseline (Alternative 1). The regulatory analysis shows that implementing the final rule is quantitatively cost-effective and an efficient use of the NRC's and Industry's resources. Uncertainty analysis shows that the net benefit ranges from $2.86 million to $6.90 million with a mean of $4.94 million. Because the rulemaking alternative is cost-effective, the rulemaking approach is recommended.

There are several benefits associated with this final rule. Under this final rule, a licensee of a nuclear power plant would no longer be required to submit a Code Case alternative request under the new § 50.55a(z) of Title 10 of the *Code of Federal Regulations* (10 CFR), which would provide an averted cost of $7.75 million (7-percent net present value) to the licensee. Additionally, the NRC would not receive Code Case alternative request submittals, which would provide an averted cost of $2.52 million (7-percent net present value) to the NRC.

Table of Contents

I. Background

The ASME develops and publishes the ASME BPV Code, which contains requirements for the design, construction, and ISI and examination of nuclear power plant components, and ASME's Nuclear Power Plants (OM) Code,[1] which contains requirements for IST of nuclear power plant components. In response to BPV Code and OM Code user requests, the ASME develops Code Cases that provide alternatives to BPV Code and OM Code requirements under special circumstances.

The NRC approves and can mandate the use of the ASME BPV Codes and OM Codes in § 50.55a, ''Codes and standards,'' through the process of incorporation by reference. As such, each provision of the ASME Codes incorporated by reference into and mandated by § 50.55a constitutes a legally-binding NRC requirement imposed by the regulations. As noted previously, ASME Code Cases, for the most part, represent alternative approaches for complying with provisions of the ASME BPV Codes and OM Codes. Accordingly, the NRC periodically amends § 50.55a to incorporate by reference the NRC's RGs listing approved ASME Code Cases that may be used as alternatives to the BPV Codes and OM Codes.[2]

This rulemaking is the latest in a series of rulemakings that incorporates by reference new versions of several RGs identifying new, revised, and reaffirmed,[3] and unconditionally or conditionally acceptable ASME Code Cases that the NRC approves for use. In developing these RGs, the staff reviews ASME BPV and OM Code Cases, determines the acceptability of each Code Case, and publishes its findings in the RGs. The RGs are revised periodically, as new Code Cases and are published by the ASME. The NRC incorporates by reference the RGs, listing acceptable and conditionally acceptable ASME Code Cases into § 50.55a. Currently, NRC RG 1.84, ''Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,'' Revision 36; RG 1.147, ''Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,'' Revision 17; and RG 1.192, ''Operation and Maintenance Code Case Acceptability, ASME OM Code,'' Revision 1, are incorporated into the NRC's regulations in § 50.55a.

II. Discussion

This rule incorporates by reference the latest revisions of the NRC RGs that list ASME BPV and OM Code Cases that the NRC finds to be acceptable, or acceptable with NRC-specified conditions (''conditionally acceptable''). Regulatory Guide 1.84, Revision 37, supersedes Revision 36; RG 1.147, Revision 18, supersedes Revision 17; and RG 1.192, Revision 2, supersedes Revision 1. The NRC also publishes a document (RG 1.193, ''ASME Code Cases Not Approved for Use'') that lists Code Cases that the NRC has not approved for generic use. The RG 1.193 is not incorporated by reference into the NRC's regulations; however, in this final rule, the NRC notes the availability of RG 1.193, Revision 5.

The ASME Code Cases that are the subject of this rulemaking are the new, revised, and reaffirmed Section III and Section XI Code Cases listed in

[1] The editions and addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants have had different titles from 2005 to 2012, and are referred to collectively in this rule as the ''OM Code.''

[2] See **Federal Register** notice, ''Incorporation by Reference of ASME BPV and OM Code Cases'' (68 FR 40469; July 8, 2003).

[3] Code Cases are categorized by ASME as one of three types: new, revised, or reaffirmed. A new Code Case provides for a new alternative to specific ASME Code provisions or addresses a new need. The ASME defines a revised Code Case to be a revision (modification) to an existing Code Case to address, for example, technological advancements in examination techniques or to address NRC conditions imposed in one of the RGs that have been incorporated by reference into § 50.55a. The ASME defines ''reaffirmed'' as an OM Code Case to be one that does not have any change to technical content, but includes editorial changes.

Supplement 11 to the 2007 BPV Code through Supplement 10 to the 2010 BPV Code, and the OM Code Cases published with the 2009 Edition through the 2012 Edition.

The latest editions and addenda of the ASME BPV and OM Codes that the NRC has approved for use are referenced in § 50.55a. The ASME also publishes Code Cases that provide alternatives to existing Code requirements that the ASME developed and approved. This rule incorporates by reference the latest revisions of RGs 1.84, 1.147, and 1.192. This rule allows nuclear power plant licensees and applicants for construction permits, operating licenses, combined licenses, standard design certifications, standard design approvals, and manufacturing licenses, under the regulations that govern license certifications, to voluntarily use the Code Cases listed in these RGs as suitable alternatives to certain provisions of the ASME BPV and OM Codes for the construction, ISI, and IST of nuclear power plant components. This action is consistent with the provisions of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, which encourages Federal regulatory agencies to consider adopting industry consensus standards as an alternative to *de novo* agency development of standards affecting an industry. This action is also consistent with the NRC policy of evaluating the latest versions of consensus standards, in terms of their suitability for endorsement by regulations or regulatory guides.

The NRC follows a three-step process to determine acceptability of new, revised, and reaffirmed Code Cases, and the need for regulatory positions on the use of these Code Cases. This process was employed in the review of the Code Cases in Supplement 11 to the 2007 Edition through Supplement 10 to the 2010 Edition of the BPV Code and the 2009 Edition through the 2012 Edition of the OM Code. The Code Cases in these supplements and OM Editions and Addenda are the subject of this rule. First, the ASME develops Code Cases through a consensus development process, as administered by the American National Standards Institute (ANSI), which ensures that the various technical interests (*e.g.,* utility, manufacturing, insurance, regulatory) are represented on standards development committees and that their view points are addressed fairly. The NRC staff actively participates in discussions and technical debates of the task groups, working groups, subgroups, and standards committees regarding the development of new and revised standards. The Code Case process includes the development of a technical justification in support of each new or revised Code Case. The ASME committee meetings are open to the public and attendees are encouraged to participate. Task groups, working groups, and subgroups report to respective standards committees. The standards committee is the decisive consensus committee in that it ensures that the development process fully complies with the ANSI consensus process.

Second, the standards committee transmits a first consideration letter ballot to every member of the standards committee, requesting comment or approval of new and revised Code Cases. Code Cases are approved by the standards committee from the first consideration letter ballot when: (1) At least two thirds of the eligible consensus committee membership vote approved; (2) there are no disapprovals from the standards committee; and (3) no substantive comments are received from the ASME oversight committees such as the Technical Oversight Management Committee (TOMC). The TOMC's duties, in part, are to oversee various standards committees to ensure technical adequacy and to provide recommendations in the development of codes and standards, as required. Code Cases that were disapproved or received substantive comments from the first consideration ballot are reviewed by the working level group(s) responsible for their development to consider the comments received. These Code Cases are approved by the standards committee on second consideration when at least two thirds of the eligible consensus committee membership vote approved, and there are no more than three disapprovals from the consensus committee.

Third, the NRC reviews new, revised, and reaffirmed Code Cases to determine their acceptability for incorporation by reference in § 50.55a through the subject RGs. This rulemaking process, when considered together with the ANSI process for developing and approving the ASME codes and standards, and Code Cases, constitutes the NRC's basis that the Code Cases (with conditions as necessary) provide reasonable assurance of adequate protection to public health and safety.

The staff concludes, in accordance with the process described, that the Code Cases are technically adequate (with conditions as necessary) and consistent with current NRC regulations, and the staff is referencing these Code Cases in the applicable RGs, thereby approving them for voluntary use, without conditions as addressed in Section A of this document; subject to the specified conditions, or as identified in Section B of this document. The staff reviewed the new, revised, and reaffirmed Code Cases identified in the three RGs being incorporated by reference into § 50.55a in this rulemaking. Therefore, the NRC approves revising the § 50.55a regulations to incorporate by reference the latest revisions of RGs 1.84, 1.147, and 1.192. Additionally, the NRC announces the availability of the latest revision of RG 1.193.

A. ASME Code Cases Approved for Unconditional Use

The Code Cases that are discussed in Table I are new, revised, or reaffirmed Code Cases that the NRC is approving for use without conditions. The NRC concludes, in accordance with the process described for review of ASME Code Cases, that each of the ASME Code Cases listed in Table I are acceptable for use without conditions. Therefore, the NRC is approving for unconditional use the Code Cases listed in Table I. This table identifies the regulatory guide the applicable Code Case that the NRC is approving for use.

The NRC revised RG 1.147, Revision 18 to approve Code Case N–786–1 in Table 1 to address inconsistencies that were identified between the NRC's position in the proposed rule regarding the acceptability of Code Case N–786 and several licensee requests for alternatives to ASME Code requirements, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z), that have utilized Code Case N–786. The NRC had authorized the use of Code Case N–786 with modifications. The NRC erred in not listing N–786 in DG–1296, Table 2 ''Conditionally Acceptable Section XI Code Cases'' with appropriate conditions, in order to be consistent with modifications that the NRC has required for requested alternatives based on Code Case N–786. In response to modifications to N–786 by licensees requesting to use this code case as an alternative to ASME Code, ASME revised the code case. The revised Code Case, N–786–1 ''Alternative Requirements for Sleeve Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping Section XI, Division 1,'' includes modifications that address all of the NRC's concerns that the NRC identified in previously approved alternatives that were based on N–786. Therefore, the NRC has listed Code Case N–786–1 in Table 1 of RG 1.147 Revision 18 in lieu of code Case N–786. There were no public comments

received on the inclusion of N–786 in the RG. Code Case N–786–1 is included in this final rule because it includes the latest ASME guidance and the NRC conditions on the use of this method of repair.

TABLE I—ASME CODE CASES APPROVED FOR UNCONDITIONAL USE

Code Case No.	Supplement	Title
Boiler and Pressure Vessel Code Section III (addressed in RG 1.84, Revision 37, Table 1)		
N–284–3	7 (10 Edition)	Metal Containment Shell Buckling Design Methods, Class MC, TC, and SC Construction, Section III, Divisions 1 and 3.
N–500–4	8 (10 Edition)	Alternative Rules for Standard Supports for Classes 1, 2, 3, and MC, Section III, Division 1.
N–520–5	10 (10 Edition)	Alternative Rules for Renewal of Active or Expired N-type Certificates for Plants Not in Active Construction, Section III, Division 1.
N–594–1	8 (10 Edition)	Repairs to P–4 and P–5A Castings without Postweld Heat Treatment Class 1, 2, and 3 Construction, Section III, Division 1.
N–637–1	3 (10 Edition)	Use of 44Fe–25Ni–21Cr–Mo (Alloy UNS N08904) Plate, Bar, Fittings, Welded Pipe, and Welded Tube, Classes 2 and 3, Section III, Division 1.
N–655–2	4 (10 Edition)	Use of SA–738, Grade B, for Metal Containment Vessels, Class MC, Section III, Division 1.
N–763	2 (10 Edition)	ASTM A 709–06, Grade HPS 70W (HPS 485W) Plate Material Without Postweld Heat Treatment as Containment Liner Material or Structural Attachments to the Containment Liner, Section III, Division 2.
N–777	4 (10 Edition)	Calibration of C_v Impact Test Machines, Section III, Divisions 1, 2, and 3.
N–785	11 (07 Edition)	Use of SA–479/SA–479M, UNS S41500 for Class 1 Welded Construction, Section III, Division 1.
N–811	7 (10 Edition)	Alternative Qualification Requirements for Concrete Level III Inspection Personnel, Section III, Division 2.
N–815	8 (10 Edition)	Use of SA–358/SA–358M Grades Fabricated as Class 3 or Class 4 Welded Pipe, Class CS Core Support Construction, Section III, Division 1.
N–816	8 (10 Edition)	Use of Temper Bead Weld Repair Rules Adopted in 2010 Edition and Earlier Editions, Section III, Division 1.
N–817	8 (10 Edition)	Use of Die Forgings, SB–247, UNS A96061 Class T6, With Thickness ≤ 4.000 in. Material, Class 2 Construction (1992 Edition or Later), Section III, Division 1.
N–819	8 (10 Edition)	Use of Die Forgings, SB–247, UNS A96061 Class T6, With Thickness ≤ 4.000 in. Material, Class 2 Construction (1989 Edition with the 1991 Addenda or Earlier), Section III, Division 1.
N–822	8 (10 Edition)	Application of the ASME Certification Mark, Section III, Divisions 1, 2, 3, and 5.
Boiler and Pressure Vessel Code Section XI (addressed in RG 1.147, Revision 18, Table 1)		
N–609–1	3 (10 Edition)	Alternative Requirements to Stress-Based Selection Criteria for Category B–J Welds, Section XI, Division 1.
N–613–2	4 (10 Edition)	Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B–D, Reactor Nozzle-To-Vessel Welds, and Nozzle Inside Radius Section Figs. IWB–2500–7(a), (b), (c), and (d), Section XI, Division 1.
N–652–2	9 (10 Edition)	Alternative Requirements to Categorize B–G–1, B–G–2, and C–D Bolting Examination Methods and Selection Criteria, Section XI, Division 1.
N–653–1	9 (10 Edition)	Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds, Section XI, Division 1.
N–694–2 [4]	1 (13 Edition)	Evaluation Procedure and Acceptance Criteria for [pressurized water reactors] (PWR) Reactor Vessel Head Penetration Nozzles, Section XI, Division 1.
N–730–1	10 (10 Edition)	Roll Expansion of Class 1 Control Rod Drive Bottom Head Penetrations in [boiling water reactors] BWRs, Section XI, Division 1.
N–769–2	10 (10 Edition)	Roll Expansion of Class 1 In-Core Housing Bottom Head Penetrations in BWRs, Section XI, Division 1.
N–771	7 (10 Edition)	Alternative Requirements for Additional Examinations of Class 2 or 3 Items, Section XI, Division 1.
N–775	2 (10 Edition)	Alternative Requirements for Bolting Affected by Borated Water Leakage, Section XI, Division 1.
N–776	1 (10 Edition)	Alternative to IWA–5244 Requirements for Buried Piping, Section XI, Division 1.
N–786–1	5 (10 Edition)	Alternative Requirements for Sleeve Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping, Section XI, Division 1.

TABLE I—ASME CODE CASES APPROVED FOR UNCONDITIONAL USE—Continued

Code Case No.	Supplement	Title
N–798	4 (10 Edition)	Alternative Pressure Testing Requirements for Class 1 Piping Between the First and Second Vent, Drain, and Test Isolation Devices, Section XI, Division 1.
N–800	4 (10 Edition)	Alternative Pressure Testing Requirements for Class 1 Piping Between the First and Second Injection Valves, Section XI, Division 1.
N–803	5 (10 Edition)	Similar and Dissimilar Metal Welding Using Ambient Temperature Automatic or Machine Dry Underwater Laser Beam Welding (ULBW) Temper Bead Technique, Section XI, Division 1.
N–805	6 (10 Edition)	Alternative to Class 1 Extended Boundary End of Interval or Class 2 System Leakage Testing of the Reactor Vessel Head Flange O-Ring Leak-Detection System, Section XI, Division 1.
N–823	9 (10 Edition)	Visual Examination, Section XI, Division 1.
N–825[5]	3 (13 Edition)	Alternative Requirements for Examination of Control Rod Drive Housing Welds, Section XI, Division 1.
N–845[6]	6 (13 Edition)	Qualification Requirements for Bolts and Studs, Section XI, Division 1.
Operation and Maintenance Code (OM) (addressed in RG 1.192, Revision 2, Table 1)		
OMN–2	2012 Edition	Thermal Relief Valve Code Case, OM Code-1995, Appendix I.
OMN–5	2012 Edition	Testing of Liquid Service Relief Valves without Insulation.
OMN–6	2012 Edition	Alternative Rules for Digital Instruments.
OMN–7	2012 Edition	Alternative Requirements for Pump Testing.
OMN–8	2012 Edition	Alternative Rules for Preservice and Inservice Testing of Power-Operated Valves That Are Used for System Control and Have a Safety Function per OM–10, ISTC–1.1, or ISTA–1100.
OMN–13, Revision 2	2012 Edition	Performance-Based Requirements for Extending Snubber Inservice Visual Examination Interval at [light water reactor] LWR Power Plants.
OMN–14	2012 Edition	Alternative Rules for Valve Testing Operations and Maintenance, Appendix I: BWR [control rod drive] CRD Rupture Disk Exclusion.
OMN–15, Revision 2	2012 Edition	Performance-Based Requirements for Extending the Snubber Operational Readiness Testing Interval at LWR Power Plants.
OMN–17	2012 Edition	Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves.

B. ASME Code Cases Approved for Use With Conditions

The Code Cases that are discussed in Table II, below, are new, revised or reaffirmed Code Cases, which the NRC is approving for use with conditions. The NRC has determined that certain Code Cases, as issued by the ASME, are generally acceptable for use, but that the alternative requirements specified in those Code Cases must be supplemented in order to provide an acceptable level of quality and safety. Accordingly, the NRC is imposing conditions on the use of these Code Cases to modify, limit, or clarify their requirements. The conditions specify, for each applicable Code Case, the additional activities that must be performed, the limits on the activities specified in the Code Case, and the supplemental information needed to provide clarity. These ASME Code Cases with conditions are included in Table 2 of each RG (*i.e.,* RG 1.84, RG 1.147, and RG 1.192). It is noted that both RG 1.147 and RG 1.192 have new ASME Code Cases with conditions; however, there are no new ASME Code Cases with conditions for RG 1.84.

TABLE II—CODE CASES APPROVED FOR CONDITIONAL USE

Code Case No.	Supplement	Title
Boiler and Pressure Vessel Code Section III (addressed in RG 1.84, Revision 37, Table 2)		
No ASME Section III Code Cases are approved for conditional use in this rule.		
Boiler and Pressure Vessel Code Section XI (addressed in RG 1.147, Revision 18, Table 2)		
N–552–1	10 (10 Edition)	Alternative Methods—Qualification for Nozzle Inside Radius Section from the Outside Surface, Section XI, Division 1.
N–576–2	9 (10 Edition)	Repair of Class 1 and 2 SB–163, UNS N06600 Steam Generator Tubing, Section XI, Division 1.
N–593–2	8 (10 Edition)	Examination Requirements for Steam Generator Nozzle-to-Vessel Welds, Section XI, Division 1.

[4] Code Case published in Supplement 1 to the 2013 Edition; included at the request of ASME.

[5] Code Case published in Supplement 3 to the 2013 Edition; included at the request of ASME.

[6] Code Case published in Supplement 6 to the 2013 Edition; included at the request of ASME.

TABLE II—CODE CASES APPROVED FOR CONDITIONAL USE—Continued

Code Case No.	Supplement	Title
N–638–6	6 (10 Edition)	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique, Section XI, Division 1.
N–662–1	6 (10 Edition)	Alternative Repair/Replacement Requirements for Items Classified in Accordance with Risk-Informed Processes, Section XI, Division 1.
N–666–1	9 (10 Edition)	Weld Overlay of Classes 1, 2, and 3 Socket Welded Connections, Section XI, Division 1.
N–749	9 (10 Edition)	Alternative Acceptance Criteria for Flaws in Ferritic Steel Components Operating in the Upper Shelf Temperature Range, Section XI, Division 1.
N–754	6 (10 Edition)	Optimized Structural Dissimilar Metal Weld Overlay for Mitigation of PWR Class 1 Items, Section XI, Division 1.
N–778	6 (10 Edition)	Alternative Requirements for Preparation and Submittal of Inservice Inspection Plans, Schedules, and Preservice and Inservice Summary Reports, Section XI, Division 1.
N–789	6 (10 Edition)	Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate Energy Carbon Steel Piping for Raw Water Service, Section XI, Division 1.
N–795	3 (10 Edition)	Alternative Requirements for BWR Class 1 System Leakage Test Pressure Following Repair/Replacement Activities, Section XI, Division 1.
N–799	4 (10 Edition)	Dissimilar Metal Welds Joining Vessel Nozzles to Components, Section XI, Division 1.
Operation and Maintenance Code (OM) (addressed in RG 1.192, Revision 2, Table 2)		
OMN–1 Revision 1	2012 Edition	Alternative Rules for Preservice and Inservice Testing of Active Electric Motor Operated-Valve Assemblies in Light-Water Reactor Power Plants.
OMN–3	2012 Edition	Requirements for Safety Significance Categorization of Components Using Risk Insights for Inservice Testing of LWR Power Plants.
OMN–4	2012 Edition	Requirements for Risk Insights for Inservice Testing of Check Valves at LWR Power Plants.
OMN–9	2012 Edition	Use of a Pump Curve for Testing.
OMN–12	2012 Edition	Alternative Requirements for Inservice Testing Using Risk Insights for Pneumatically and Hydraulically Operated Valve Assemblies in Light-Water Reactor Power Plants (OM-Code 1998, Subsection ISTC).
OMN–16 Revision 1	2012 Edition	Use of a Pump Curve for Testing.
OMN–18	2012 Edition	Alternate Testing Requirements for Pumps Tested Quarterly Within ±20% of Design Flow.
OMN–19	2012 Edition	Alternative Upper Limit for the Comprehensive Pump Test.
OMN–20	2012 Edition	Inservice Test Frequency.

The NRC's evaluation of the Code Cases and the reasons for the NRC's conditions are discussed in the following paragraphs. Notations have been made to indicate the conditions duplicated from previous versions of the RG.

ASME BPV Code, Section III Code Cases (RG 1.84)

There are no new or revised Section III Code Cases in Supplement 11 to the 2007 Edition through Supplement 10 to the 2010 Edition that the NRC is conditionally approving in Revision 37 of RG 1.84.

ASME BPV Code, Section XI Code Cases (RG 1.147)

Code Case N–552–1 [Supplement 10, 2010 Edition]

Type: Revised.

Title: Alternative Methods—Qualification for Nozzle Inside Radius Section from the Outside Surface, Section XI, Division 1.

The conditions on Code Case N–552–1 are identical to the conditions on N–552 that were approved by the NRC in Revision 16 of RG 1.147 in October 2010. The reasons for imposing these conditions in Code Case N–576 continue to apply to N–576–2. Therefore, these conditions have been retained for this Code Case in Revision 18 of RG 1.147.

Code Case N–576–2 [Supplement 9, 2010 Edition]

Type: Revised.

Title: Repair of Class 1 and 2 SB–163, UNS N06600 Steam Generator Tubing, Section XI, Division 1.

The conditions on Code Case N–576–2 are identical to the conditions on N–576–1 that were approved by the NRC in Revision 17 of RG 1.147 in October 2014. The reasons for imposing these conditions are not resolved by Code Case N–576–2 and, therefore, these conditions have been retained in Revision 18 of RG 1.147.

Public comments on N–576–2 requested that the NRC revise the proposed condition to follow IWA–4200 in their code of record. In response, the NRC revised the ''note'' in the condition in Revision 18 of RG 1.147 to eliminate the portion regarding reconciliation. The revised ''note'' will read: ''Note: Steam generator tube repair methods require prior NRC approval through the Technical Specifications. This Code Case does not address certain aspects of this repair, *e.g.,* the qualification of the inspection and plugging criteria necessary for staff approval of the repair method.''

Code Case N–593–2 [Supplement 8, 2010 Edition]

Type: Revised.

Title: Examination Requirements for Steam Generator Nozzle-to-Vessel Welds, Section XI, Division 1.

The first condition on Code Case N–593–2 is identical to the condition on Code Case N–593 that was first approved by the NRC in Revision 13 of RG 1.147 in June 2003. The condition stated that, ''Essentially 100 percent (not less than 90 percent) of the examination volume A–B–C–D–E–F–G–H [in Figure 1 of the Code Case] must be examined.'' The reasons for imposing this condition in Code Case N–593 continue to apply to Code Case N–593–2. Therefore, this condition has been retained for this Code Case in Revision 18 of RG 1.147.

The second condition on Code Case N–593–2 is new. Revision 2 of the Code Case reduces the weld examination volume by reducing the width examined on either side of the weld from $t_s/2$ to ½ in. The basis for this change in inspection volume is to revise the examination volume for steam generator nozzle-to-vessel welds (under Code Case N–593–2) to be consistent with that specified in Code Case N–613–1 for similar vessel nozzles.

The NRC identified an issue with respect to Code Case N–593–2 regarding its inconsistency with Code Case N–613–1. Code Case N–593–2 and Code Case N–613–1 address certain types of nozzle-to-vessel welds. Code Case N–613–1 states that ''. . . Category B–D nozzle-to-vessel welds previously ultrasonically examined using the examination volumes of Figs. IWB–2500–7(a), (b), and (c) may be examined using the reduced examination volume (A–B–C–D–E–F–G–H) of Figs. 1, 2, and 3.'' The keywords are ''previously examined.'' Code Case N–613–1 requires the larger volume to have been previously examined before examinations using the reduced volume can be performed. This ensures that there are no detrimental flaws in the component adjacent to the weld that would be missed if the inspection was performed only on the reduced volume. However, Code Case N–593–2 allows a licensee to immediately implement the reduced volume. Accordingly, the NRC is approving Code Case N–593–2 with a condition to require that the examination volume specified in Section XI, Table IWB–2500–1, Examination Category B–D, be used for the examination of steam generator nozzle-to-vessel welds at least once prior to use of the reduced volume, as allowed by the Code Case.

Code Case N–638–6 [Supplement 6, 2010 Edition]

Type: Revised.

Title: Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique, Section XI, Division 1.

Code Case N–638–6 allows the use of the automatic or machine gas-tungsten arc welding (GTAW) temper bead technique. The GTAW is a proven method that can produce high-quality welds because it affords greater control over the weld area than many other welding processes.

The NRC first approved Code Case N–638 (Revision 0) in 2003 (Revision 13 of RG 1.147). Code Case N–638–4 was approved by the NRC in Revision 16 of RG 1.147 with two conditions. Code Case N–638–5 was not approved in RG 1.147 for generic use but has been approved through requests for an alternative to § 50.55a. Code Case N–638–6 resolves one of the NRC's concerns that were raised when Code Case N–638–4 was considered for approval and, therefore, the NRC is deleting that condition from RG 1.147.

Many of the provisions for developing and qualifying welding procedure specifications for the temper bead technique that were contained in earlier versions of the Code Case have been incorporated into ASME Section IX, ''Welding and Brazing Qualifications,'' QW–290, ''Temper Bead Welding.'' Code Case N–638–6 retains the provisions not addressed by QW–290 and references QW–290 in lieu of specifying them directly in the Code Case.

In addition to retaining one of the two conditions on Code Case N–638–4, the NRC considered adding a new condition to address technical issues raised by certain provisions of Code Case N–638–6.

The retained condition on Code Case N–638–6 pertains to the qualification of nondestructive evaluation (NDE) and is identical to the condition on N–638–4 that was approved by the NRC in Revision 17 of RG 1.147 in October 2014. The reasons for imposing this condition in Code Case N–638 continue to apply to N–638–6. Therefore, this condition has been retained in Revision 18 of RG 1.147.

The new proposed condition (2) states that section 1(b)(1) of the Code Case shall not be used. Section 1(b)(1) would allow through-wall circumferential repair welds to be made using the temper bead technique without heat treatment. Revisions 1 through 5 of N–638 limited the depth of the weld to one-half of the ferritic base metal thickness and the previously stated condition will limit repairs to this previously approved value. Repairs exceeding one-half of the ferritic base metal thickness may represent significant repairs (*e.g.,* replacement of an entire portion of the reactor coolant loop). At the time that this revision of the Code Case was approved by ASME, the NRC staff had concerns related to through-wall repairs. Subsequently, through further evaluation related to a separate rulemaking, the NRC resolved its concerns related to through-wall repairs. Therefore, the NRC determined that proposed Condition (2) is unnecessary and has removed this condition from the final RG 1.147, Revision 18.

Code Case N–662–1 [Supplement 6, 2010 Edition]

Type: Revised.

Title: Alternative Repair/Replacement Requirements for Items Classified in Accordance with Risk-Informed Processes, Section XI, Division 1.

The condition on Code Case N–662–1 is identical to the condition on N–662 that was approved by the NRC in Revision 16 of RG 1.147 in October 2010. The reasons for imposing this condition were not resolved by Code Case N–662–1. Therefore, this condition has been retained for this Code Case in Revision 18 of RG 1.147.

Code Case N–666–1 [Supplement 9, 2010 Edition]

Type: Revised.

Title: Weld Overlay of Classes 1, 2, and 3 Socket Welded Connections, Section XI, Division 1.

Code Case N–666 was unconditionally approved in Revision 17 of RG 1.147. The NRC approves Code Case N–666–1 with one condition.

The condition is that a surface examination must be performed on the completed weld overlay for Class 1 and Class 2 piping socket welds. Code Case N–666–1 contains provisions for the design, installation, evaluation, pressure testing, and examination of the weld overlays on Class 1, 2, and 3 socket welds. Section 5(a)(1) of the Code Case requires NDE of the completed weld overlay in accordance with the Construction Code. However, various Construction Codes have been used in the design and fabrication of the nuclear power plant fleet. The requirements for NDE have changed over the years, as more effective and reliable methods and techniques have been developed. In addition, Construction Code practices have evolved based on design and construction experience. The NRC is concerned that some of the Construction

Codes would not require a surface examination of the weld overlay and would, therefore, be inadequate for NDE of the completed weld overlay. The NRC believes that a VT–1 examination alone would not be adequate and that a surface or volumetric examination must be performed on the completed weld overlay for Class 1 and Class 2 piping socket welds. Fabrication defects must be dispositioned using the surface or volumetric examination criteria of the Construction Code, as identified in the Repair/Replacement Plan.

Public commenters requested that the words ''and seal weld'' be removed from the condition because the phrase implies that the seal weld requires surface examination in addition to surface examination of the final overlay. The Code Case requires a visual examination of the seal weld, remaining socket weld, and adjacent base material before the weld overlay can be applied, which the NRC has determined is the appropriate examination prior to the application of the weld overlay. Therefore, proposed Condition (1) has been revised to remove ''and seal weld.''

In the proposed rule, the NRC included a second condition, which required that if a surface or volumetric examination of the completed weld overlay was not required by the plant-specific Construction Code, that a VT–1 visual examination be performed of the weld overlay. Paragraph 5(a) of the Code Case requires ''visual and nondestructive examination of the final structural overlay weld.'' Paragraph 5(a)(1) of the Code Case specifically requires a VT–1 visual examination of the completed weld overlay. Public commenters requested that the NRC remove the second condition because it was redundant and unnecessary. The NRC staff agrees and thus Condition (2) has been removed from the final rule.

Code Case N–749 [Supplement 9, 2010 Edition]

Type: New.

Title: Alternative Acceptance Criteria for Flaws in Ferritic Steel Components Operating in the Upper Shelf Temperature Range, Section XI, Division 1.

The NRC has determined that instead of the upper shelf transition temperature, T_c, as defined in the Code Case, the following shall be used:

$T_c = 154.8\ °F + 0.82 \times RT_{NDT}$ (in U.S Customary Units), and

$T_c = 82.8\ °C + 0.82 \times RT_{NDT}$ (in International System (SI) Units).

T_c is the temperature above which the elastic plastic fracture mechanics (EPFM) method must be applied. Additionally, the NRC defines temperature T_{c1} below, which the linear elastic fracture mechanics (LEFM) method must be applied:

$T_{c1} = 95.36\ °F + 0.703 \times RT_{NDT}$ (in U.S Customary Units), and

$T_{c1} = 47.7\ °C + 0.703 \times RT_{NDT}$ (in International System (SI) Units).

Between T_{c1} and T_c, while the fracture mode is in transition from LEFM to EPFM, users should consider whether or not it is appropriate to apply the EPFM method. Alternatively, the licensee may use a different T_c value, if it can be justified by plant-specific Charpy curves.

Code Case N–749 provides acceptance criteria for flaws in ferritic components for conditions when the material fracture resistance will be controlled by upper-shelf toughness behavior. These procedures may be used to accept a flaw in lieu of the requirements in Section XI, paragraphs IWB–3610 and IWB–3620, which use LEFM to evaluate flaws that exceed limits of Section XI, paragraph IWB–3500. Code Case N–749 employs EPFM methods (J-integral) and is patterned after the fracture methodology and acceptance criteria that currently exist in Section XI, paragraph IWB–3730(b), and Section XI, Nonmandatory Appendix K, ''Assessment of Reactor Vessels with Upper Shelf Charpy Impact Energy Levels.'' The Code Case states that the proposed methodology is applicable if the metal temperature of the component exceeds the upper shelf transition temperature, T_c, which is defined as nil-ductility reference temperature (RT_{NDT}) plus 105 degrees F. The justification for this, as documented in the underlying White Paper, PVP2012–78190, ''Alternative Acceptance Criteria for Flaws in Ferritic Steel Components Operating in the Upper Shelf Temperature Range,'' is that the ASME BPV Code, Section XI, K_{1c} curve will give a $(T - RT_{NDT})$ value of 105 degrees F at K_{1c} of 200 ksi√inch.

Defining an upper shelf transition temperature purely based on LEFM data is not convincing because it ignores EPFM data and Charpy data and their relationship to the LEFM data. The NRC staff performed calculations on several randomly selected reactor pressure vessel surveillance materials with high upper-shelf energy values and low RT_{NDT} values from three plants and found that using T_c, as defined in the Code Case, is nonconservative because at the temperature of $RT_{NDT} + 105$ degrees F, the Charpy curves show that most of the materials will not reach their respective upper-shelf energy levels. The NRC staff's condition is based on a 2015 ASME Pressure Vessels and Piping Conference paper (PVP2015–45307) by Mark Kirk, Gary Stevens, Marjorie Erickson, William Server, and Hal Gustin entitled, ''Options for Defining the Upper Shelf Transition Temperature (Tc) for Ferritic Pressure Vessel Steels,'' where T_c and T_{c1} are defined as the intersections of specific toughness curves of LEFM data and EPFM data, as shown in that paper. Using the model in the 2015 PVP paper is justified because, in addition to its theoretically motivated approach in applying the temperature-dependent flow behavior of body-centered cubic materials, the model is also supported by numerous LEFM data and 809 EPFM data in the upper shelf region.

While the T_c proposed in Code Case N–749 is conservative based on the intersection of the mean curves of the two sets of data, the NRC determined that actual or bounding properties (on the conservative side) should be used instead of mean material properties for evaluating flaws detected in a ferritic component using the EPFM approach. This will prevent inaccurate component failure predictions using the EPFM approach, due to overestimated material properties. Further, the NRC's approach considers the temperature range for fracture mode transition between LEFM and EPFM. Based on the previous discussion, the NRC is imposing a condition on the use of Code Case N–749 that: (1) The two equations for T_c be used instead of T_c, as proposed in the Code Case for requiring EPFM application, when the temperature is above T_c, and (2) the two equations for T_{c1} be used for requiring LEFM application when temperature is below T_{c1}. Between T_{c1} and T_c, while the fracture mode is in transition between LEFM and EPFM, users should consider whether or not it is appropriate to apply the EPFM method.

Alternatively, the licensee may use a different T_c value, if it can be justified by plant-specific Charpy curves.

Code Case N–754 [Supplement 6, 2010 Edition]

Type: New.

Title: Optimized Structural Dissimilar Metal Weld Overlay for Mitigation of PWR Class 1 Items, Section XI, Division 1.

The NRC approves Code Case N–754 with three conditions. Code Case N–754 provides requirements for installing optimized structural weld overlays (OWOL) on the outside surface of ASME Class 1 heavy-wall, large-diameter piping composed of ferritic, austenitic stainless steel, and nickel based alloy materials in pressurized water reactors

(PWRs) as a mitigation measure, where no known defect exists or the defect depth is limited to 50 percent through wall. The upper 25 percent of the original pipe wall thickness is credited as a part of the OWOL design in the analyses performed, in support of these repairs. The technical basis supporting the use of OWOLs is provided in the Electric Power Research Institute (EPRI) Materials Reliability Project (MRP) Report MRP–169, Revision 1–A, entitled, ''Technical Basis for Preemptive Weld Overlays for Alloy 82/182 Butt Welds in PWRs.'' By letter dated August 9, 2010 (ADAMS Accession No. ML101620010), the NRC informed the Nuclear Energy Institute (NEI) that the staff found that MRP–169, Revision 1, as revised by letter dated February 3, 2010, adequately described: (1) Methods for the weld overlay design; (2) the supporting analyses of the design; (3) the experiments that verified the analyses; and (4) the inspection requirements of the dissimilar metal welds to be overlaid. However, the NRC identified the following conditions.

The first condition requires that the conditions imposed on the use of OWOLs contained in the NRC final safety evaluation for MRP–169, Revision 1–A, must be satisfied. Eighteen limitations and conditions are described in the final safety evaluation that address issues such as fatigue crack growth rates, piping loads, design life of the weld overlay, and reexamination frequencies. The imposition of the conditions in the safety evaluation provide reasonable assurance that the structural integrity of the pipes repaired through the use of weld overlays will be maintained.

Code Case N–754 references Code Case N–770–2, ''Alternative Examination Requirements and Acceptance Standards for Class 1 Pressure Water Reactor (PWR) Piping and Vessel Nozzle Butt Welds Fabricated With UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities, Section XI, Division 1.'' The reference to Code Case N–770–2 provides the ASME requirements for the performance of the preservice and ISI examinations of OWOLs, with additional requirements if the ultrasonic examination is qualified for axial flaws. The NRC approved Code Case N–770–2 with conditions in § 50.55a(g)(6)(ii)(F) on July 18, 2017 (82 FR 32934). Accordingly, the second condition on the use of Code Case N–754 is that the preservice and inservice inspections of OWOLs must satisfy § 50.55a(g)(6)(ii)(F), *i.e.,* meet the provisions of Code Case N–770–2.

The third condition addresses a potential implementation issue in Code Case N–754 with respect to the deposition of the first layer of weld metal. The second sentence in paragraph 1.2(f)(2) states that ''The first layer of weld metal deposited may not be credited toward the required thickness, but the presence of this layer shall be considered in the design analysis requirements in 2(b).'' The NRC found that, among licensees, there can be various interpretations of the words used in the ASME BPV Code and Code Cases. In this instance, the NRC determined that the word ''may'' needed to be changed to ''shall'' in the second sentence in paragraph 1.2(f)(2), as a condition for use of this Code Case. Accordingly, the NRC is adding a third condition to clarify that the first layer shall not be credited toward the required OWOL thickness unless the chromium content of the first layer is at least 24 percent.

Code Case N–778 [Supplement 6, 2010 Edition]

Type: New.

Title: Alternative Requirements for Preparation and Submittal of Inservice Inspection Plans, Schedules, and Preservice and Inservice Summary Reports, Section XI, Division 1.

The NRC is approving Code Case N–778 with two conditions. Section XI, paragraph IWA–1400(d), in the editions and addenda currently used by the operating fleet, requires licensees to submit plans, schedules, and preservice and ISI summary reports to the enforcement and regulatory authorities having jurisdiction at the plant site. In the licensees' pursuit to decrease burden, they have alluded to the resources associated with the requirement to submit the items previously listed. Code Case N–778 was developed to provide an alternative to the requirements in the ASME BPV Code, in that the items previously listed would only have to be submitted if specifically required by the regulatory and enforcement authorities.

The NRC reviewed its needs with respect to the submittal of the subject plans, schedules, and reports, and determined that it is not necessary to require the submittal of plans and schedules. The NRC made this determination because the latest up-to-date plans and schedules are available at the plant site and can be requested by the NRC at any time. However, the NRC determined that summary reports still need to be submitted. Summary reports provide valuable information regarding examinations that have been performed, conditions noted during the examinations, the corrective actions performed, and the status of the implementation of the ISI program. Accordingly, the NRC is approving Code Case N–778 with conditions to require that licensees continue to submit summary reports in accordance with paragraph IWA–6240 of the 2009 Addenda of ASME Section XI, as addressed below.

The two conditions are modeled on the requirements currently in paragraph IWA–6240 of the 2009 Addenda, Section XI. The requirements in Section XI do not specify when the reports are to be submitted to the regulatory authority; rather, the requirements only state that the reports shall be completed. The first condition requires that the preservice inspection summary report be submitted before the date of placement of the unit into commercial service. The second condition requires that the ISI summary report be submitted within 90 calendar days of the completion of each refueling outage. The conditions rely on the date of commercial service and the completion of a refueling outage to determine when the reports are needed to be submitted to the regulatory authority.

Code Case N–789 [Supplement 6, 2010 Edition]

Type: New.

Title: Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping for Raw Water Service, Section XI, Division 1.

The NRC is approving Code Case N–789 with one condition. For certain types of degradation, the Code Case provides requirements for the temporary repair of degraded moderate energy Class 2 and Class 3 piping systems by external application of welded reinforcement pads. The Code Case does not require inservice monitoring for the pressure pad. However, the NRC determined that it is unacceptable to not monitor the pressure pad because there may be instances where an unexpected corrosion rate may cause the degraded area in the pipe to expand beyond the area that is covered by the pressure pad. This could lead to the pipe leaking and may challenge the structural integrity of the repaired pipe. Therefore, the NRC is approving Code Case N–789 with a condition to require a monthly visual examination of the installed pressure pad for evidence of leakage.

In the proposed rule, the NRC expressed concern that the corrosion rate specified in paragraph 3.1(1) of the Code Case may not address certain scenarios. That paragraph would allow

either a corrosion rate of two times the actual measured corrosion rate at the reinforcement pad installation location or four times the estimated maximum corrosion rate for the system. To ensure that a conservative corrosion rate is used to provide sufficient margin, the NRC considered adding a second condition that requires that the design of the pressure pad use the higher of the two corrosion rates calculated, based on the same degradation mechanism as the degraded location. However, as a result of a public comment, the NRC reconsidered and determined that using a corrosion rate of either two times the actual measured corrosion rate in that location, or four times the estimated maximum corrosion rate for the system, already provides a sufficiently conservative estimate of the corrosion rate; therefore, a condition is not needed.

Code Case N–795 [Supplement 3, 2010 Edition]

Type: New.

Title: Alternative Requirements for BWR Class 1 System Leakage Test Pressure Following Repair/Replacement Activities, Section XI, Division 1.

The NRC is approving Code Case N–795 with two conditions. The first condition addresses a prohibition against the production of heat through the use of a critical reactor core to raise the temperature of the reactor coolant and pressurize the reactor coolant pressure boundary (RCPB) (sometimes referred to as nuclear heat). The second condition addresses the duration of the hold time when testing non-insulated components to allow potential leakage to manifest itself during the performance of system leakage tests.

Code Case N–795 was intended to address concerns that performing the ASME-required pressure test for boiling water reactors (BWRs) under shutdown conditions, (1) places the unit in a position of significantly reduced margin, approaching the fracture toughness limits defined in the Technical Specification Pressure-Temperature (P–T) curves, and (2) requires abnormal plant conditions/alignments, incurring additional risks and delays, while providing little added benefit beyond tests, which could be performed at slightly reduced pressures under normal plant conditions. However, due to restrictions imposed by the pressure control systems, most BWRs cannot obtain reactor pressure corresponding to 100 percent rated power during normal startup operations at low power levels that would be conducive to performing examinations for leakage. The alternative test, provided by Code Case N–795, would be performed at slightly reduced pressures and normal plant conditions, which the NRC finds will constitute an adequate leak examination and would reduce the risk associated with abnormal plant conditions and alignments.

However, the NRC has had a long-standing prohibition against the production of heat through the use of a critical reactor core to raise the temperature of the reactor coolant and pressurize the RCPB. A letter dated February 2, 1990, from James M. Taylor, Executive Director for Operations, NRC, to Messrs. Nicholas S. Reynolds and Daniel F. Stenger, Nuclear Utility Backfitting and Reform Group (ADAMS Accession No. ML14273A002), established the NRC position with respect to use of a critical reactor core to raise the temperature of the reactor coolant and pressurize the RCPB. In summary, the NRC's position is that testing under these conditions involves serious impediments to careful and complete inspections, and therefore, inherent uncertainty with regard to assuring the integrity of the RCPB. Further, the practice is not consistent with basic defense-in-depth safety principles.

The NRC's position established in 1990, was reaffirmed in Information Notice No. 98–13, ''Post-Refueling Outage Reactor Pressure Vessel Leakage Testing Before Core Criticality,'' dated April 20, 1998. The Information Notice was issued in response to a licensee that had conducted an ASME BPV Code, Section XI, leakage test of the reactor pressure vessel and subsequently discovered that it had violated 10 CFR part 50, appendix G, IV.A.2.d. This regulation states that pressure tests and leak tests of the reactor vessel that are required by Section XI of the ASME Code must be completed before the core is critical. The Information Notice references NRC Inspection Report 50–254/97–27 (ADAMS Accession No. ML15216A276), which documents that licensee personnel performing VT–2 examinations of the drywell at one BWR plant covered 50 examination areas in 12 minutes, calling into question the adequacy of the VT–2 examinations.

The bases for the NRC's historical prohibition of pressure testing with the core critical can be summarized as follows:

1. Nuclear operation of a plant should not commence before completion of system hydrostatic and leakage testing to verify the basic integrity of the RCPB, a principal defense-in-depth barrier to the accidental release of fission products. In accordance with the defense-in-depth safety precept, the nuclear power plant design provides for multiple barriers to the accidental release of fission products from the reactor.

2. Hydrotesting must be done essentially water solid (*i.e.,* free of pockets of air, steam or other gases) so that stored energy in the reactor coolant is minimized during a hydrotest or leaktest.

3. The elevated reactor coolant temperatures, associated with critical operation, result in a severely uncomfortable and difficult working environment in plant spaces where the system leakage inspections must be conducted. The greatly increased stored energy in the reactor coolant, when the reactor is critical, increases the hazard to personnel and equipment in the event of a leak. As a result, the ability for plant workers to perform a comprehensive and careful inspection becomes greatly diminished.

However, the NRC staff has determined that pressure testing with the core critical is acceptable, if performed after repairs of a limited scope, where only a few locations or a limited area needs to be examined, and when ASME Code Section XI, Table IWB–2500–1, Category B–P (the pressure test required once per cycle of the entire RCPB), has been recently performed, thus verifying the integrity of the overall RCPB. The NRC also notes that Code Case N–795 does not allow for the use of the alternative test pressure following repairs/replacements on the RPV, therefore it does not violate 10 CFR part 50, Appendix G. The NRC determined that the risk associated with nuclear heat at low power is comparable with the risk to the plant, when the test is performed without nuclear heat (with the core subcritical) during mid-cycle outages, when decay heat must be managed. Performing the pressure test under shutdown conditions at full operating pressure without nuclear heat requires securing certain key pressure control, heat removal, and safety systems. Under such conditions, it is more difficult to control temperature and pressure, when there is significant decay heat production, such as after a mid-cycle outage, which may reduce the margin available to prevent exceeding the plant pressure-temperature limits.

The scope of repairs should be relatively small, when the pressure test is conducted using nuclear heat, in order to minimize the personnel safety risk and to avoid rushed examinations. Code Case N–795 does not place any restrictions on the size or scope of the repairs for which the alternative may be used, other than the alternative test pressure may not be used to satisfy

pressure test requirements following repair/replacement activities on the reactor vessel. It is impractical to specify a particular number of welded or mechanical repairs that would constitute a ''limited scope.'' However, if the plant is still in a refueling outage and has already performed the ASME Section XI Category B–P pressure test of the entire RCPB, it is likely that subsequent repairs would be performed only on an emergent basis, and would generally be of a limited scope. Additionally, the overall integrity of the RCPB will have been recently confirmed via the Category B–P test. For mid-cycle maintenance outages, the first condition allows the use of nuclear heat to perform the test, if the outage duration is fourteen (14) days or less. This would tend to limit the scope of repairs, and also limit use of the Code Case to outages when decay heat was a significant problem. Therefore, the first condition on Code Case N–795 states:

''The use of nuclear heat to conduct the BWR Class 1 system leakage test is prohibited (*i.e.,* the reactor must be in a non-critical state), except during refueling outages in which the ASME Section XI Category B–P pressure test has already been performed, or at the end of mid-cycle maintenance outages fourteen (14) days or less in duration.''

With respect to the second condition and adequate pressure test hold time, the technical analysis supporting Code Case N–795 indicates that the lower test pressure provides more than 90 percent of the flow, which would result from the pressure corresponding to 100 percent power. However, a reduced pressure means a lower leakage rate, so additional time is required in order for there to be sufficient leakage to be observed by inspection personnel. Section XI, paragraph IWA–5213, ''Test Condition Holding Time,'' does not require a holding time for Class 1 components, once test pressure is obtained. To account for the reduced pressure, Code Case N–795 would require a 15-minute hold time for non-insulated components. The NRC has determined that 15 minutes does not allow for an adequate examination, because it is not possible to predict the entire range of scenarios or types of defects that could result in leakage. While some types of defects could result in immediate leakage, such as an improperly torqued bolted connection; other types of defects, such as weld defects or tight cracks could represent a more torturous path for leakage and may result in delayed leakage. The staff determined that, due to the uncertainty in the time required for leakage to occur to an extent, it would be readily detectable by visual examination, hence, it is appropriate to conservatively specify a longer hold time of 1 hour for non-insulated components. Therefore, the final rule retains the one hour hold time for non-insulated components.

Code Case N–799 [Supplement 4, 2010 Edition]

Type: New.

Title: Dissimilar Metal Welds Joining Vessel Nozzles to Components, Section XI, Division 1.

The NRC approves Code Case N–799 with four conditions. Code Case N–799 is a new Code Case developed to provide examination requirements for the steam generator primary nozzle to pump casing attachment weld for AP–1000 plants and dissimilar metal welds joining vessel nozzles to pumps used in recent reactor designs (*e.g.,* AP–1000, Advanced BWR). Nuclear power plant pump casings are typically manufactured from cast austenitic stainless steel (CASS) materials. The NRC is approving the Code Case with conditions to address the shortcomings in the Code Case with respect to requirements for ultrasonic examination.

The CASS is an anisotropic and inhomogeneous material. The manufacturing process can result in varied and mixed structures. The large size of the anisotropic grains affects the propagation of ultrasound by causing severe attenuation, changes in velocity, and scattering of ultrasonic energy. Refraction and reflection of the sound beam occurs at the grain boundaries, which can result in specific volumes of material not being examined, or defects being missed or mischaracterized. The grain structure of the associated weldments also impacts the effectiveness and reliability of the examinations. Accordingly, it is paramount that robust examination techniques be used.

Research has been conducted by several domestic and international organizations attempting to address the shortcomings associated with the use of conventional methods for the inspection of CASS materials. The results of a study at Pacific Northwest National Laboratory (PNNL) were published in NUREG/CR–6933, ''Assessment of Crack Detection in Heavy-Walled Cast Stainless Steel Piping Welds Using Advanced Low-Frequency Ultrasonic Methods'' (ADAMS Accession No. ML071020409). The study demonstrated that additional measures were required to reliably detect and characterize flaws in CASS materials and their associated weldments.

Performance demonstration requirements for CASS components and associated weldments have not yet been developed by the industry. To ensure that effective and reliable examinations are performed, the NRC is adopting the following four conditions on the Code Case.

The first condition addresses the gap between the probe and component surface. Industry experience shows that effective ultrasonic examinations depend, to a great extent, on limiting the gap between the probe and component surface to less than 0.032-inch. The BPV Code does not have any requirements with respect to surface smoothness and waviness. It has been demonstrated that reduced coupling and probe lift-off on ''rough'' surfaces have the potential to present a scattering effect at an interface where an acoustic beam impinges, to redirect and mode convert some energy, which when returned to the probe can be the source of spurious signals, or cause flaws to be mis-characterized or missed altogether. Accordingly, the first condition requires that the scanning surfaces have a gap less than 0.032-inch beneath the ultrasonic testing probe. Gaps greater than 0.032-inch must be considered to be unexamined, unless it can be demonstrated, on representative mockups, that a Section XI, Appendix VIII, Supplement 10, demonstration can be passed.

The second condition (No. 2a in DG–1296) is that the examination requirements of Section XI, Mandatory Appendix I, paragraph I–3200(c) must be applied. Code Case N–799 does not contain specific requirements regarding examination techniques. Paragraph I–3200(c) contains specific requirements that can be applied.

The third condition (No. 2c in DG–1296) is that ultrasonic depth and sizing qualifications for CASS components must use the ASME BPV Code requirements in Section XI, Appendix VIII, Supplement 10. Supplement 10 contains qualification requirements for dissimilar metal welds, and the use of these requirements will ensure that robust techniques are applied.

The fourth condition (No. 2e in DG–1296) is that cracks that are detected but cannot be depth-sized with performance-based procedures, equipment, and personnel qualifications consistent with ASME Code Section XI, Appendix VIII, shall be repaired or removed.

OM Code Cases (RG 1.192)

Code Case OMN–1, Revision 1 [2012 Edition]

Type: Revised.

Title: Alternative Rules for Preservice and Inservice Testing of Active Electric

Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants.

The conditions on Code Case OMN–1, Revision 1 [2012 Edition] are identical to the conditions on OMN–1 [2006 Addenda] that were approved by the NRC in Revision 1 of RG 1.192 in October 2014. The reasons for imposing these conditions are not resolved by Code Case OMN–1, Revision 1 [2012 Edition] and, therefore, these conditions have been retained in Revision 2 of RG 1.192.

Code Case OMN–3 [2012 Edition]

Type: Reaffirmed.

Title: Requirements for Safety Significance Categorization of Components Using Risk Insights for Inservice Testing of LWR Power Plants.

The conditions on Code Case OMN–3 [2012 Edition] are identical to the conditions on OMN–3 [2004 Edition] that were approved by the NRC in Revision 1 of RG 1.192 in October 2014. The reasons for imposing these conditions are not resolved by Code Case OMN–3 [2012 Edition] and, therefore, these conditions have been retained in Revision 2 of RG 1.192.

Code Case OMN–4 [2012 Edition]

Type: Reaffirmed.

Title: Requirements for Risk Insights for Inservice Testing of Check Valves at LWR Power Plants.

The conditions on Code Case OMN–4 [2012 Edition] are identical to the conditions on OMN–4 [2004 Edition] that were approved by the NRC in Revision 1 of RG 1.192 in October 2014. The reasons for imposing these conditions are not resolved by Code Case OMN–4 [2012 Edition] and, therefore, these conditions have been retained in Revision 2 of RG 1.192.

Code Case OMN–9 [2012 Edition]

Type: Reaffirmed.

Title: Use of a Pump Curve for Testing.

The conditions on Code Case OMN–9 [2012 Edition] are identical to the conditions on OMN–9 [2004 Edition] that were approved by the NRC in Revision 1 of RG 1.192 in October 2014. The reasons for imposing these conditions are not resolved by Code Case OMN–9 [2012 Edition] and, therefore, these conditions have been retained in Revision 2 of RG 1.192.

Code Case OMN–12 [2012 Edition]

Type: Reaffirmed.

Title: Alternative Requirements for Inservice Testing Using Risk Insights for Pneumatically and Hydraulically Operated Valve Assemblies in Light-Water Reactor Power Plants (OM-Code 1998, Subsection ISTC).

The conditions on Code Case OMN–12 [2012 Edition] are identical to the conditions on OMN–12 [2004 Edition] that were approved by the NRC in Revision 1 of RG 1.192 in October 2014. The reasons for imposing these conditions are not resolved by Code Case OMN–12 [2012 Edition] and, therefore, these conditions have been retained in Revision 2 of RG 1.192.

Code Case OMN–16, Revision 1 [2012 Edition]

Type: Revised.

Title: Use of a Pump Curve for Testing.

Code Case OMN–16, 2006 Addenda, was approved by the NRC in Regulatory Guide 1.192, Revision 1. With respect to Code Case OMN–16, Revision 1, 2012 Edition, there was an editorial error in the publishing of this Code Case in that Figure 1 from the original Code Case (*i.e.,* Rev. 0, 2006 Addenda) was omitted. Accordingly, the NRC approves OMN–16, Revision 1, with a condition requiring that Figure 1 from the original Code Case be used when implementing OMN–16, Revision 1.

Code Case OMN–18 [2012 Edition]

Type: Reaffirmed.

Title: Alternate Testing Requirements for Pumps Tested Quarterly Within ±20% of Design Flow.

The ASME OM Code defines Group A pumps as those pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations. The OM Code specifies that each Group A pump undergoes a Group A test quarterly and a comprehensive test biennially. The OM Code requires that the reference value for a comprehensive test to be within 20 percent of pump design flow, while the reference value for a Group A test needs to be within 20 percent of the pump design flow, if practicable. The biennial comprehensive test was developed (first appeared in the 1995 Edition of the OM Code) because pump performance concerns demonstrated that more stringent periodic testing was needed at a flow rate within a more reasonable range of the pump design flow rate, than typically performed during the pump IST in the past.

Currently, when performing either the quarterly Group A test or the biennial comprehensive pump test, licensees must comply with certain limits for the flow Acceptable Range, the flow Required Action Range, the differential pressure (or discharge pressure) Acceptable Range, and the differential pressure (or discharge pressure) Required Action Range. The limits for the quarterly Group A test are obtained by using a factor of 1.10 times the flow reference value (Q_r) or the differential or discharge pressure reference value (ΔP_r or P_r), as applicable to the pump type. The limits for the biennial comprehensive pump test are obtained by using the factor of 1.03 times Q_r or ΔP_r (or P_r), as applicable to the pump type, providing more restrictive test ranges and higher quality data.

Code Case OMN–18, 2012 Edition, would remove the Code requirement to perform a biennial comprehensive pump test, where the quarterly Group A pump test is performed within ±20 percent of the pump design flow rate, with instruments having the ability to obtain the accuracies required for the comprehensive pump test. The NRC finds the performance of a quarterly Group A pump test, at flow within ±20 percent of the pump design flow rate, will be sufficient to detect mechanical and hydraulic degradation of the tested pump. The NRC finds that this will satisfy the intent of the biennial comprehensive pump test, with the exception that the test acceptable ranges and required action ranges are less precise than required for the comprehensive test. Therefore, the NRC approves Code Case OMN–18, 2012 Edition, with a condition to specify the use of a factor of 1.06 for the Group A test parameters, to be consistent with the test ranges for the comprehensive test. The NRC concludes that the factor of 1.06 will provide a reasonable test range, when applying Code Case OMN–18 to Group A pumps tested quarterly, within ±20 percent of the pump design flow rate. The NRC finds that the quarterly Group A test for pumps within ±20 percent of the pump design flow rate, combined with the provisions in the Code Case OMN–18 for the pump instrumentation and the conditions in RG 1.192 for the test ranges, will provide reasonable assurance of the operational readiness of these pumps, as an acceptable alternative to the comprehensive pump test provisions in the ASME OM Code.

Code Case OMN–19 [2012 Edition]

Type: Reaffirmed.

Title: Alternative Upper Limit for the Comprehensive Pump Test.

A requirement for a periodic pump verification test was added in Mandatory Appendix V, ''Pump Periodic Verification Test Program,'' to the 2012 Edition of the OM Code. The mandatory appendix is based on the determination by the ASME that a pump periodic verification test is needed to confirm that a pump can meet the required (differential or discharge) pressure as applicable, at its highest

design basis accident flow rate. Code Case OMN–19, 2012 Edition, would allow an applicant or licensee to use a multiplier of 1.06 times the reference value in lieu of the 1.03 multiplier for the comprehensive pump test's upper Acceptable Range criteria and Required Action Range, High criteria reference in the ISTB test acceptance criteria tables. The NRC considers Code Case OMN–19 to be acceptable where the provisions of Appendix V for a pump periodic verification test as referenced by ISTB–1400 are also satisfied to detect mechanical and hydraulic degradation. Therefore, the NRC approves Code Case OMN–19, 2012 Edition, with the condition that the provisions in paragraph ISTB–1400 and Mandatory Appendix V be applied when implementing the Code Case.

Code Case OMN–20 [2012 Edition]

Type: New.

Title: Inservice Testing Frequency.

Surveillance Requirement (SR) 3.0.3 from Technical Specification (TS) 5.5.6, ''Inservice Testing Program,'' allows licensees to apply a delay period before declaring the SR for TS equipment ''not met,'' if a licensee inadvertently exceeds or misses the time limit for performing the TS surveillance. Licensees have been applying SR 3.0.3 to inservice tests performed in accordance with the ASME Codes. The NRC has determined that licensees cannot use TS 5.5.6 to apply SR 3.0.3 to inservice tests under § 50.55a(f) that are not associated with a TS surveillance. To invoke SR 3.0.3, the licensee must first discover that a TS surveillance was not performed at its specified frequency. Therefore, the delay period that SR 3.0.3 provides does not apply to non-TS support components tested under § 50.55a(f). The OM Code does not provide for inservice test frequency reductions or extensions. In order to provide inservice test frequency reductions or extensions that cannot be provided by SR 3.0.3 from TS 5.5.6, ASME developed OM Code Case OMN–20. The NRC has reviewed OM Code Case OMN–20 and has found it acceptable for use. The NRC determined that OM Code Case OMN–20 may be applied to editions and addenda of the OM Code that are listed in § 50.55a(a)(1)(iv). Therefore, the NRC has included a condition in RG 1.192, specifying that Code Case OMN–20 is applicable to editions and addenda of the OM Code listed in § 50.55a(a)(1)(iv).

C. ASME Code Cases Not Approved for Use (RG 1.193)

The ASME Code Cases that are currently issued by the ASME, but not approved for generic use by the NRC are listed in RG 1.193, ''ASME Code Cases not Approved for Use.'' In addition to the ASME Code Cases that the NRC has found to be technically or programmatically unacceptable, RG 1.193 includes Code Cases on reactor designs for high-temperature gas-cooled reactors and liquid metal reactors, reactor designs not currently licensed by the NRC, and certain requirements in Section III, Division 2, for submerged spent fuel waste casks, that are not endorsed by the NRC. Regulatory Guide 1.193 complements RGs 1.84, 1.147, and 1.192; RG 1.193 confirms the Code Cases that are not approved for use. The NRC is not adopting any of the Code Cases listed in RG 1.193.

III. Opportunities for Public Participation

The proposed rule and draft RGs were published in the **Federal Register** on March 2, 2016 (81 FR 10780), for a 75-day comment period. The public comment period closed on May 16, 2016.

After the close of the public comment period, the NRC held a public meeting on August 22, 2016, to discuss the status of this proposed rule. The public meeting summary is available in ADAMS under Accession No. ML16265A001.

IV. Public Comment Analysis

The NRC received a total of seven comment submissions on the proposed rule and draft RGs. Table III lists the commenters, their affiliation, and the ADAMS Accession Number for each submission.

TABLE III—COMMENT SUBMISSIONS RECEIVED ON THE PROPOSED RULE AND DRAFT RGS

Submission ID	Commenter name	Affiliation	ADAMS accession No.
1	Paul Donavin	Private Citizen	ML16063A509
2	Gregory Frederick and Dan Patten	Electric Power Research Institute	ML16126A524
3	Anonymous	Unknown	ML16133A422
4	Charles Pierce	Southern Nuclear Operating Company	ML16137A857
5	Ralph Hill III	ASME	ML16138A835
6	Mark Gowin	Private Citizen	ML16139A798
7	David Helker	Exelon Generation Company, LLC	ML16153A432

The NRC reviewed every comment submission and identified 32 unique comments requiring the NRC's consideration and response. Comment summaries and the NRC's responses are presented in this section. At the end of each summary, the individual comments represented by the summary are identified in the form [XX–YY] where XX represents the Submission ID in Table III and YY represents the sequential comment within the submission.

Public Comments on Draft Regulatory Guides

Regulatory Guide 1.84, Revision 37 (DG–1295)

No public comments were submitted regarding Regulatory Guide 1.84, Revision 37 (Draft Guide (DG)–1295), therefore no NRC response is needed.

Regulatory Guide 1.147, Revision 18 (DG–1296)

Code Case N–552–1

Comment: The proposed conditions on N–552–1 were incorporated into the ASME BPV Code, Section XI, 2005 Addenda when Code Case N–552 was incorporated into the code. However, these conditions have never been incorporated into the Code Case itself. The proposed conditions are identical to those imposed on Code Case N–552 in Revision 16 of RG 1.147. ASME does not object to these conditions. [ASME 5–2]

NRC Response: The NRC agrees with this comment.

No change was made to the final rule as a result of this comment.

Code Case N–576–2

Comment: Because the NRC has adopted the 2008 Addenda with no conditions on IWA–4200, ASME recommends that the proposed

condition be revised to state ''. . . is to be performed in accordance with IWA–4200 of the code of record for the current ISI Program.'' [ASME 5–3]

NRC Response: The NRC agrees, in part, with this comment. The NRC staff has adopted the 2008 Addenda with no conditions on IWA–4200. However, the staff does not agree that the proposed condition/note in Regulatory Guide 1.147 should be revised to state ''. . . is to be performed in accordance with IWA–4200 of the code of record for the current ISI program'', because there may be licensees whose code of record is prior to 2008 and such a condition is not necessary because licensees would be required to follow IWA–4200 in their code of record, if they were to adopt this Code Case. As a result, because use of the repair method described in this Code Case (N–576–2) requires the NRC's review and approval prior to implementation and licensees will be required to follow IWA–4200 in their code of record, the NRC modified the ''note'' on this Code Case to eliminate the portion of the ''note'' regarding reconciliation. The revised ''note'' now reads:

''Note: Steam generator tube repair methods require prior NRC approval through the Technical Specifications. This Code Case does not address certain aspects of this repair, *e.g.,* the qualification of the inspection and plugging criteria necessary for staff approval of the repair method.''

Code Case N–638–6

Comment: Condition 1 was incorporated into IWA–4673(a)(2) of the 2013 Edition when N–638–6 was incorporated into the Code. This condition has also been incorporated into N–638–8, which has been published in the 2015 Code Case Book. Condition (2) was incorporated into IWA–4671(b)(1) of the 2013 Edition when N–638–6 was incorporated into the Code. Because there were no conditions imposed on the use of IWA–4673(a)(2) or IWA–4671(b)(1) in the draft rule, to incorporate by reference the 2013 Edition of the ASME BPV Code, Section XI, ASME recommends that both of the proposed conditions be removed and Code Case N–638–6 be moved to Table 1 of RG 1.147, Revision 18. [ASME 5–4]

NRC Response: The NRC agrees, in part, with this comment. Regarding proposed Condition (1), the staff agrees that Condition (1) was incorporated into IWA–4673(a)(2) of the 2013 Edition of ASME BPV Code, Section XI, when ASME incorporated Code Case N–638–6 into the Section XI. Proposed Condition (1) was also addressed in Code Case N–638–8. However, Code Case N–638–6 does not address proposed Condition (1) and this version of the Code Case will be available for use by licensees who will not adopt the 2013 Edition of Section XI for several years. Therefore, the NRC determined that it is appropriate to include proposed Condition (1) in RG 1.147, Revision 18.

Regarding proposed Condition (2), Paragraph 1(b)(1) of Code Case N–638–6 contains changes from the previous version of the Code Case, which allows through-wall circumferential welds and includes additional requirements when performing repairs that utilize through-wall circumferential welds. At the time that this revision of the Code Case was approved by the ASME, the staff had concerns related to through-wall repairs. Subsequently, the NRC resolved its concerns. Therefore, the NRC determined that proposed Condition (2) is unnecessary.

The NRC has removed proposed Condition (2) on Code Case N–638–6 from the final RG 1.147, Revision 18.

No change was made to the final rule as a result of this comment.

Code Cases N–666 and N–666–1

Comment: A new condition has been added to N–666, which is listed as a Superseded Code Case: A surface (magnetic particle or liquid penetrant) examination must be performed after installing the seal weld and weld overlay on Class 1 and 2 piping socket welds. The fabrication defects, if detected, must be dispositioned using the surface examination acceptance criteria of the Construction Code identified in the Repair/Replacement Plan.

As stated in our comment on N–666–1, the phrase ''seal weld and'' should be removed from the first sentence. Also, the addition of a new condition to a Code Case that was previously unconditionally approved in the Reg. Guide, and is now superseded, seems inappropriate. Several plants would likely have this version of the Code Case in their Section XI ''tool box'' until the end of their current Inspection Interval, and would be apparently (but not obviously) bound by the new condition, upon issuance of the new revision to Regulatory Guide. The third paragraph under Section B. DISCUSSION, in the draft RG, includes the statement ''If a Code Case is implemented by a licensee and a later version of the Code Case is incorporated by reference into 10 CFR 50.55a and listed in Tables 1 and 2 during the licensee's present 120-month ISI program interval, that licensee may use either the later version or the previous version. An exception to this provision would be the inclusion of a limitation or condition on the use of the Code Case that is necessary, for example, to enhance safety.'' Perhaps this could be supplemented with another sentence such as, ''In this case, the condition will be entered for the superseded Code Case under Table 5.'' [EPRI 2–4, Exelon 7–4]

NRC Response: The NRC agrees with this comment. The condition shown in Table 5 of DG–1295 for Code Case N–666 was in error.

The condition on Code Case N–666 in Table 5 from the final RG 1.147, Revision 18 has been removed.

No change was made to the final rule as a result of this comment.

Comment: Condition 1—The construction code may not always require a surface examination (depending on the construction code) on socket welds. This condition is appropriate. However, the words ''and seal weld'' in the first sentence should be removed from the condition because it is inappropriate to require surface examination of non-structural seal welds whose only function is to seal a leak. The ASME recommends revising this condition to remove the words ''and seal weld'' in the first sentence. Condition 2—This condition should be removed as 5(a)(1) already required a Visual VT–1 examination of completed weld overlays irrespective of the class of the joint. This condition is redundant and only causes confusion. ASME recommends removing this proposed condition. [EPRI 2–1, ASME 5–5]

NRC Response: The NRC agrees with this comment. The function of the seal weld is to seal a leak so that sound weldment for the overlay can be applied. The code case requires a visual examination of the seal weld, remaining socket weld, and adjacent base material before the weld overlay can be applied, which the NRC has determined is the appropriate examination prior to the application of the weld overlay. Therefore, Condition 1 has been revised to remove ''and seal weld.'' Regarding Condition 2, the NRC agrees with the commenter. The code case requires a visual examination of the seal pass and the completed weld overlay and provides appropriate acceptance criteria. Therefore, the condition is redundant and unnecessary. Condition 2 has been removed from Code Case N–666 in Table 2 from the final RG 1.147, Revision 18.

No change was made to the final rule as a result of this comment.

Code Case N–711

Comment: ASME recommends that this Code Case N–711 be removed from RG 1.193, Table 2 and added to Table 2 of RG 1.147 with appropriate conditions to address NRC technical concerns with the use of this case. [ASME 5–10]

NRC Response: The NRC disagrees with this comment. The NRC declines at this time to adopt the recommended changes to the regulatory guides. It would not be appropriate to include the Code Case in RG 1.147 without first having sought public comment on the adoption of the Code Case. Nonetheless, the NRC has reviewed the information provided by ASME and will consider approval of the Code Case in future rulemaking activities.

No change was made to the final rule as a result of this comment.

Code Case N–722–2

Comment: ASME requests that the NRC identify any technical concerns with N–722–2 and list these concerns in R.G. 1.193, Table 2. [ASME 5–11]

NRC Response: The NRC disagrees with this comment. The NRC disagrees with the comment because the NRC does not provide comments in the Regulatory Guide 1.193 on ASME Code Cases, which the NRC mandates for use as augmented inservice inspection programs under § 50.55a(g)(6)(ii). Any conditions that the NRC finds necessary to require are included under the particular section of § 50.55a(g)(6)(ii)(D), (E) or (F), as applicable. This is to avoid confusion such that a stakeholder does not use versions of these ASME Code Cases in lieu of the mandated versions of the ASME Code Case in § 50.55a(g)(6)(ii). However, in order to be responsive to the stakeholder comment, the NRC will provide the current concerns with the implementation of ASME Code Case N–722–2, as a response to this comment to be included in the **Federal Register** notice.

The NRC currently finds ASME Code Case N–722–2 unacceptable as written due to the following main issues. First, the basis for the removal of the Parts Examined from N–722–1 was found to be in error. According to an ASME Code interpretation, XI–1–13–27, not all items removed in N–722–2 were covered by the inspection requirements of ASME Code Case N–770–1. The ASME Code Case N–722 will need to be revised with a new basis for the removal of Parts Examined to be considered for approval by the NRC. Second, Note 11 is not acceptable. The bases for this concern is the same basis as § 50.55a(g)(6)(ii)(F)(2), which restricts the application of this material condition to exempt volumetric and visual examination requirements in N–770–1. The NRC is concerned that the wording of this exemption may allow insufficiently mitigated items to be exempt from currently required visual inspection requirements for components containing alloy 600/82/182 to maintain structural and leak-tight integrity. Once again though, it is not the intent of the NRC to include these items as conditions or limitations in the regulatory guide. The current wording to redirect the user to the applicable section of § 50.55a(g)(6)(ii)(E) will remain, because versions of this ASME Code Case, as well as N–729 and N–770, are not alternatives to the Code requirements, but are mandated by § 50.55a as augmented ISI requirements. For these reasons the NRC disagrees with the comment.

No change was made to the final rule as a result of this comment.

Code Case N–749

Comment: Public comment 5–6 raised two main points:

1. The comment takes issue with the temperature, T_c, above which the staff suggests that EPFM techniques should be used. The formula for T_c, given in the staff's condition, differs from that proposed in Code Case N–749.

2. The comment takes issue with the part of the staff's condition stating that ''*T_c is the temperature above which elastic plastic fracture mechanics (EPFM) must be applied*.'' Item 4 of the public comment suggests adopting a permissive rather than a perspective condition by replacing the word ''*must*'' with the word ''*may*'' in the preceding sentence. [ASME 5–6]

NRC Response: The NRC disagrees with this comment. The staff's responses to these points are, as follows:

Concerning point 1, the technical bases for the staff's proposed equation for T_c are well documented, as discussed previously, and are well supported by data for RPV steels both before and after neutron irradiation. This documentation appears in PVP 2015–45307. Conversely, the T_c equation in the proposed Code Case relates only to the intersection of the ASME K_{Ic} curve with a fracture toughness (K_{Ic}) value of 220 MPa$\sqrt{m}$, a value that does not correspond well to any known materials data and, moreover, does not account for the effects of irradiation embrittlement. The NRC staff's proposal for T_c is thus better supported by materials data than is the Code Case value.

Concerning point 2, in order for a permissive condition to be acceptable (*e.g.,* the use of ''may''), it would need to be demonstrated that application of LEFM approaches to flaw assessment on the upper shelf fracture behavior is always conservative relative to the more technically correct EPFM approach. This has not been demonstrated in either Code Case N–749 or in its supporting technical basis document. As one example, an approach to using LEFM on the upper shelf fracture behavior would be to continue to use the ASME K_{Ic} curve. At upper shelf temperatures, the K_{Ic} curve over-estimates the fracture toughness relative to the ductile fracture toughness (*i.e.*, J0.1 or J–R), which is non-conservative.

No change was made to the final rule as a result of this comment.

Code Case N–754

Comment: The third condition proposed for this Code Case inversely paraphrases existing statements in the Code Case, causing confusion to the user as to what the condition actually adds to the existing requirements. Further, by paraphrasing the requirements, essential technical requirements, such as chrome content in the dilution zone, are omitted which we do not believe is the intent of the condition. The **Federal Register** states that the reason for this condition is that ''In this instance, the NRC felt the word ''may'' needed to be changed to ''shall'' in the second sentence in paragraph 1.2(f)(2) as a condition for use of this Code Case.'' In the English language, when the term ''may'' is followed by the word ''not'', the phrase means the same as ''shall not.'' However, if this phrase is truly a concern for some, then the condition should be written exactly as the Code Case except change the one word ''may'' to ''shall.'' [EPRI 2–2, ASME 5–7]

NRC Response: The NRC disagrees with this comment. Condition (3) addresses the following two statements in Paragraph 1.2(f)(2) of Code Case N–754 that reads: ''. . . The first layer of weld metal deposited may not be credited toward the required thickness, but the presence of this layer shall be considered in the design analysis requirements in 2(b). Alternatively, a first diluted layer may be credited toward the required thickness, provided the layer and the associated dilution zone contain at least 24% Cr [chromium] . . .'' The first sentence in Paragraph 1.2(f)(2) could be interpreted so that the first weld layer could be credited toward the required thickness because the word ''may not'' does not absolutely prohibit such action. In addition, the first sentence in the quoted statements does not have restriction on

the chromium contents for crediting the first weld layer toward the required thickness.

The second sentence in the above quote limits the chromium content of at least 24 percent; however, the second sentence began with the word ''Alternatively.'' The word ''Alternatively'' implies that the requirement in the second sentence is optional, *i.e.,* a licensee may choose to satisfy either the first sentence or the second sentence, but the licensee does not need to satisfy both.

For example, a licensee deposits a first weld layer that contains less than 24 percent chromium. The licensee could consider the first layer, as part of the required weld overlay thickness, based on the first sentence above because the first sentence does not identify a specific chromium content. Therefore, it does not restrict the consideration of the first layer for the required weld overlay thickness. The second sentence in the above quote does require the chromium content to be at least 24 percent. However, the licensee could interpret that the second sentence does not apply to this case because the second sentence is an alternate, optional requirement based on the word ''Alternatively.''

The staff finds that Condition (3) does not omit the essential technical requirements such as the chrome content in the dilution zone. Condition (3) requires that if the first weld layer cannot achieve a chromium content of at least 24 percent, it cannot be considered as part of the weld overlay thickness. The staff recognizes that Condition (3) provides the same requirements as in Paragraph 1.2(f)(2). However, the purpose of Condition (3) is to clarify the requirements in Paragraph 1.2(f)(2).

No change was made to the final rule as a result of this comment.

Code Case N–784

Comment: This Code Case enables personnel to receive credit for experience hours for laboratory practice beyond the required number of hours of laboratory training. For Level II certification, the total experience hours may be reduced from 800 to 400 if the experience consists of a combination of 80 hours of field experience and 320 hours laboratory practice by scanning specimens containing flaws in materials representative of those in actual power plant components. The field experience will likely be in nuclear plants but there is no requirement for UT examiners to obtain their experience in a nuclear plant. While the experience credited would be on samples and mockups, those samples would be required to contain actual flaws whereas over many hours of field experience, fewer flaws may be encountered. Further, to ensure the effectiveness of the laboratory practice, the Level II experience time would be credited only after the individual passed an Appendix VIII, Supplement 2 performance demonstration for length and depth sizing. Since other performance demonstrations are required for certification for vessels, ferritic piping and bolting, for example, it is considered reasonable to only require the Supplement 2 performance demonstration as a threshold for crediting the laboratory practice hours. EPRI will provide reports (Nondestructive Evaluation: Fast-Track NDE Work Force Enhancement, Volume 1; 1019119 and Nondestructive Evaluation: Fast-Track NDE Work Force Enhancement, Volume 2, 1021150) to the USNRC to support this Code Case and address the impact of the reduced experience. This case does not reduce the training hours. [ASME 5–12]

NRC Response: The NRC disagrees with this comment. The ASME BPV Code replaces field experience with training hours without a defined technical basis. While the NRC is open to evidence related to a technical basis for the substitution of laboratory experience as a substitute for hours of work experience, the impact of the substitution of laboratory hours for field experience and nuclear power plant familiarization is unknown. The two documents cited in the comment require 1,050 hours of hands-on practice with hundreds of hours of additional classwork, not only 320 hours of laboratory training. If future work showed that 320 hours would be sufficient or the Code Case was modified to be in line with these documents, the NRC would consider allowing the use of the Code Case.

No change was made to the final rule as a result of this comment.

Code Case N–789

Comment: The NRC Condition [2] does not allow the user to apply the actual corrosion rate for the pressure pad design. This reflects the staff position that the factors of 2 and 4 do not provide reasonable assurance that actual corrosion rate is bounded. However, the compensatory measures of inservice monitoring and the short acceptance period of one operating cycle verify and provide assurance that both structural and leak integrity will be maintained during the temporary acceptance period. Condition (2) is contrary to several NRC SERs that have evaluated and approved the Code Case for application at dozens of domestic plants. Those SERs require that the reinforcing pad be designed to accommodate twice the actual measured corrosion rate or *if unknown,* then 4 times the maximum experienced in that or a similar system at the same plant for the same degradation mechanism. Corrosion rates are dependent upon many system variables—one primary factor being the amount and frequency of fluid flow. To impose the rate that may occur on a seldom-used dead-leg of a system to an area of active flow, where the actual corrosion rate has been measured is technically inappropriate. Since the monthly monitoring imposed by Condition (1) was initiated for the same reason that this condition was proposed—namely, the potential for an unexpected corrosion rate—this condition should be removed. [EPRI 2–3, ASME 5–8]

NRC Response: The NRC agrees with this comment. The NRC determined that the current language in the Code Case, which requires using a corrosion rate of either two times the actual measured corrosion rate in that location, or four times the estimated maximum corrosion rate for the system, is reasonable and provides a conservative estimate of the corrosion rate. This conservatively estimated corrosion rate, coupled with proposed Condition (1) that requires enhanced inservice monitoring, provides reasonable assurance that should corrosion rates be more aggressive than originally predicted, there will be sufficient time to initiate corrective actions prior to excessive leakage or loss of structural integrity. Therefore, the NRC has determined that proposed Condition (2) is not necessary.

The NRC has removed proposed Condition (2) on Code Case N–789 from the final RG 1.147, Revision 18.

No change was made to the final rule as a result of this comment.

Comment: Paragraph 3.2(i) of Code Case N–789 has a typographic error where it states ''. . . piping designed to NC–2650, ND–3650. . . .'' NC–2650 should be NC–3650. Code Case N–789–2 corrected this statement to read ''. . . piping designed to NC–3650 or ND–3650. . . .'' The use of this Code Case N–789 should be conditioned to require using the corrected language for paragraph 3.2(i) in N–789–2. [Anonymous 3–1, Exelon 7–1]

NRC Response: The NRC agrees with the commenter. Code Case N–789 Paragraph 3.2(i) contains a typographical error. The code case references NC–2650 and the correct reference is NC–3650. NC–2650 does not exist in ASME Code Section III and

NC–3650 is the correct portion of the Code to use for the design of reinforcing pads. The NRC does not believe that this typographical error represents a safety concern. In order to prevent the delay of issuance of the final rule by including a new condition on the code case, the NRC will address this issue in a future rulemaking.

No change was made to the final rule as a result of this comment.

Code Case N–795

Comment: The commenters requested that one or both proposed conditions on the use of this Code Case in DG–1296 be removed: (1) Prohibition of use of nuclear heat to perform the leakage test; and (2) Hold time for noninsulated components must be 1 hour versus 15 minutes required by Code Case N–795. [Southern 4–1, ASME 5–9, and Exelon 7–2]

NRC Response: The NRC agrees, in part, with this comment. As discussed in detail in the proposed rule in 81 FR 10780, dated March 2, 2016, the historical prohibition of the use of nuclear heat for pressure testing is based on concerns about the quality of the VT–2 examinations performed with the core critical, due to the high temperatures in containment, which limit stay times for inspectors, and also concerns about personnel safety. However, the commenters emphasized that Code Case N–795 is only intended for use in the case of limited scope repairs, such as the replacement of a main steam relief valve pilot valve (involving a single mechanical joint) when the relief valve is found to be leaking during startup. Code Case N–795 states that the alternative test pressure may not be used to satisfy the requirements of Table IWB–2500–1, Category B–P (the pressure test required once per cycle of the entire reactor coolant pressure boundary). Code Case N–795 does not place any restrictions on the size or scope of the repairs for which the alternative may be used, other than the alternative test pressure may not be used to satisfy pressure test requirements, following repair/replacement activities on the reactor vessel.

However, upon review of the public comments, the staff has determined that the risk associated with performing the pressure test with nuclear heat at low power is comparable with the risk to the plant, when the test is performed without nuclear heat (with the core subcritical) during mid-cycle outages when decay heat must be managed. Performing the pressure test under shutdown conditions at full operating pressure without nuclear heat requires securing certain key pressure control, heat removal, and safety systems. Under such conditions, it is more difficult to control temperature and pressure, when there is significant decay heat production, such as after a mid-cycle outage, which may reduce the margin available to prevent exceeding the plant pressure-temperature limits.

The NRC considers it desirable that the scope of repairs be relatively small when the pressure test is conducted using nuclear heat, in order to minimize the personnel safety risk and to avoid rushed examinations. The staff considers it impractical to specify a particular number of welded or mechanical repairs that would constitute a ''limited scope.'' However, if the plant is still in a refueling outage and has already performed the ASME Section XI Category B–P pressure test of the entire RCPB, it is likely that subsequent repairs would be performed only on an emergent basis and would generally be of a limited scope. Additionally, the overall integrity of the RCPB will have been recently confirmed via the Category B–P test. For mid-cycle maintenance outages, the staff proposes to modify the condition to incorporate a limit on the outage duration of fourteen (14) days. This would tend to limit the scope of repairs, and also limit use of the Code Case to outages when decay heat was a significant problem. Therefore, the first condition on Code Case N–795 in Table 2 of DG–1296, which currently reads:

1. The use of nuclear heat to conduct the BWR Class 1 system leakage test is prohibited (*i.e.*, the reactor must be in a non-critical state).

a. This condition also applies to pressure testing of reactor coolant pressure boundary components repaired or replaced in accordance with Section XI, IWA–4000.

is modified to read:

1. The use of nuclear heat to conduct the BWR Class 1 system leakage test is prohibited (*i.e.*, the reactor must be in a non-critical state), except during refueling outages in which the ASME Section XI Category B–P pressure test has already been performed, or at the end of mid-cycle maintenance outages fourteen (14) days or less in duration.

With respect to the comment on the second condition, the NRC disagrees with this comment. A one hour hold time is not unreasonable for non-insulated components. Inspectors do not need to be in containment during the hold time. Comment 5–9 (ASME) discussed the technical basis for Code Case N–795, which stated that pressure testing at 87 percent of full operating pressure would only result in a 7 percent reduction in flow, while the hold time is being increased by 50 percent from 10 minutes to 15 minutes. However, it is not possible to predict the entire range of scenarios or types of defects that could result in leakage. While some types of defects could result in immediate leakage, such as an improperly torqued bolted connection, other types of defects, such as weld defects or tight cracks could represent a more torturous path for leakage and may result in delayed leakage. Because the visual examination may be conducted with the core critical, stay times for examiners in containment may be limited; therefore, it is desirable that any leakage be readily detectable. The staff determined that, due to the uncertainty in the time required for leakage to occur, to an extent that it would be readily detectable by visual examination, it is appropriate to conservatively specify a longer hold time of 1 hour for non-insulated components. Therefore, no changes are made to Condition (2) requiring a 1-hour hold time for non-insulated components.

No change was made to the final rule as a result of this comment.

Code Case N–799

Comment: This is a Code Case to define the examination volume/area where older Section XI codes (up through 2010 Edition) do not recognize the defined configuration. The conditions proposed in the Code Case are not included in the proposed rule to accept the 2013 Edition of Section XI and the Code Case configuration is defined in the 2013 Code Edition. Commenters believe that this results in inconsistent requirements for plants using older Code versions versus newer Code versions. The examination conditions proposed for this Code Case use are not appropriate for a volume of interest Code Case. If the NRC considers the conditions appropriate, commenters believe that they should be included in a revision to 10 CFR 50.55a to assure consistent application, regardless of Code year and Addenda being applied. Specifically Conditions (3) and (5) should be removed from the Code Case. [Southern 4–2, Southern 4–3, and Exelon 7–3]

NRC Response: The NRC agrees, in part, with this comment.

Regarding the removal of proposed Condition (3) from N–799, the NRC disagrees with the comment. The NRC doesn't find that the examination of the inner ⅓ of the component-to-component weld depicted in Figure 1 of Code Case N–799 provides reasonable assurance that the integrity of the component-to-component welds will be maintained throughout the operating life of the plant. Code Case N–799 was written to support new plant construction to provide examination requirements for a weld configuration, which did not exist in Section XI (*i.e.*, component-to-component welds). Specifically, the examination requirements described in Code Case N–

799 would apply to the steam generator nozzle-to-reactor coolant pump casing (SG-to-RCP) weld in the AP1000 design and the reactor vessel nozzle-to-recirculation pump weld in the Advanced Boiling Water Reactor (ABWR). The following discussion will focus on the AP1000 design, but the staff's overall concern is also applicable to the reactor vessel-to-reactor coolant pump connection for the ABWR design.

The AP1000 design is unique in that a reactor coolant pump is welded directly to each of the two outlet nozzles on the steam generator channel head. This SG-to-RCP weld is a dissimilar metal (low alloy steel to cast austenitic stainless steel with Alloy 52/152 weld metal) circumferential butt weld with a double sided weld joint configuration, similar to that of a reactor vessel shell weld. Also, this unique component-to-component weld is part of the reactor coolant pressure boundary and is, therefore, subject to the examination requirements of ASME Section XI, Subsection IWB.

ASME Section XI, IWB–2500 requires a full volume examination of all component welds, except those welds found in piping and those found in nozzles welded to piping. However, for the component-to-component welds in question, Code Case N–799 only requires a licensee to perform a volumetric examination of the inner ⅓ of the weld and a surface examination of the outer diameter. The staff notes that the requirements of Code Case N–799 are identical to those in ASME Section XI, Table IWB–2500–1, Examination Category B–F for welds between vessel nozzles larger than NPS 4 and piping. As such, the staff does not believe that examination requirements proposed in Code Case N–799 are appropriate for the component-to-component welds because the service conditions of the aforementioned welds are significantly different from those that would be experienced by a traditional vessel nozzle-to-piping/safe end butt weld. Specifically, in addition to the operating environment (RCS pressure, temperature, and exposure to coolant) and loads expected on a traditional nozzle-to-safe end weld, each SG-to-RCP weld will support the full weight of a reactor coolant pump with no other vertical or lateral supports. The SG-to-RCP welds will also be subject to pump rotational forces and vibration loads from both the steam generator and the reactor coolant pump during service. In the absence of operating experience for the weld in question or a bounding analysis, which demonstrates that a potential fabrication defect in the outer ⅔ of the weld will not experience subcritical crack growth, the effects of these additional operating loads and stresses are indeterminate. Absent either of the above, the staff finds that it is inappropriate to limit the examination volume to the inner ⅓ of the weld as typical of a piping weld at this time. When the examination volume that can be qualified by performance demonstration is less than 100 percent of the weld volume, a licensee should include an ultrasonic examination to examine the qualified volume and perform a flaw evaluation of the largest hypothetical crack that could exist in the volume not qualified for ultrasonic examination. No change was made to the rule as a result of this comment.

The NRC agrees that performing the examination in accordance with Section XI, Appendix VIII, Supplement 10, for detection and sizing would eliminate the need for the requirement to perform a flaw evaluation, based on the largest hypothetical flaw in the unqualified examination volume. However, the NRC determined a full volume examination of the entire weld and heat affected zone is required to provide reasonable assurance of structural integrity of the component-to component welds addressed by Code Case N–799. The NRC also determined that requiring the examination procedures to be qualified in accordance with Section XI, Appendix VIII, Supplement 10, would eliminate the need for several of the other conditions that were proposed for N–799. Therefore, the final regulatory guide was modified to specify only four conditions for Code Case N–799, as follows:

(i) Ultrasonic examination procedures, equipment, and personnel shall be qualified by performance demonstration in accordance with Section XI, Appendix VIII, Supplement 10. When applying the examination requirements of Figure IWB–2500–8, the examination volume shall be extended to include 100 percent of the weld.

(ii) Examination requirements of Section XI, Mandatory Appendix I, paragraph I–3200(c) must be applied.

(iii) Ultrasonic depth and sizing qualifications for cast austenitic stainless steel components must follow Appendix VIII, Supplement 10, using representative cast austenitic stainless steel mockups containing representative cracks and be independent of other Supplement 10 qualifications.

(iv) Cracks detected and not depth sized to Appendix VIII type performance-based procedures, equipment, and personnel qualifications shall be repaired or removed.

The NRC agrees with the examination requirement regarding the consistency between the Code Case and the codes, where the Code Case that has been incorporated should be consistent. The NRC disagrees with the statement that the proposed conditions are not appropriate for a volume of interest Code Case. The NRC is planning to include this topic in a future rulemaking.

Code Case N–806

Comment: ASME stated that it has taken action to address some of these concerns and has published Code Case N–806–1, providing additional requirements for determining wall thickness loss rates. The ASME recommends that the NRC consider developing conditions on the use of this case that would enable the endorsement of the case in Table 2 of RG 1.147. [ASME 5–13]

NRC Response: The NRC disagrees with this comment. The NRC recognizes that ASME has addressed the NRC's concerns regarding the derivation of the corrosion rate in predicting metal loss in piping and has incorporated the corrosion rate derivation in the published Code Case N–806–1. However, the current rulemaking is for Code Case N–806, which does not contain sufficient information regarding the corrosion rate. The ASME suggested that the NRC develop conditions on the use of the Code Case such that the NRC could approve the Code Case for RG 1.147. The NRC has determined that approval of Code Case N–806 with conditions would require too many conditions to address several open issues regarding the relationship to the derivation of the corrosion rate, which still need to be resolved. Therefore, the NRC cannot approve Code Case N–806 in this rulemaking.

No change was made to the final rule as a result of this comment.

Code Case N–813

Comment: This Code Case should be removed from Table 2 of Regulatory Guide 1.193 and added to Table 1 of Regulatory Guide 1.147 because of the following reasons.

1. The requirements of Code Case N–813 are identical to changes made in the 2013 Edition of Section XI, which are being considered under a separate draft 10 CFR 50.55a rule. The NRC has not proposed any conditions on these requirements in the 2013 Edition. It is inappropriate for the NRC to impose conditions on the same requirements in Case N–813 as the requirements in the 2013 Edition.

2. This Case permits acceptance of subsurface flaws detected during preservice examination using the same criteria applicable to flaws detected during inservice examination. There is no greater likelihood of subsurface flaws detected during preservice examination to grow unacceptably than there is for the same flaws to grow during inservice examination. Operating experience has

shown that the propensity for failure is increased by repairing such flaws, whereas leaving them in place has never been shown to be a precursor to failure. Without weld repair, there is no mechanism expected to produce unacceptable flaw growth, whereas repair welding itself has been repeatedly shown to cause flaws to grow to the point of failure. The provisions of this Case, and the identical provisions in the 2013 Edition, improve safety.

3. The technical basis for this Code Case and accompanying Code revision states that the action is being sought to prevent the unnecessary excavation and weld repair of subsurface indications, which can be analytically shown to be benign over the expected service lifetime of a component. Based on operating experience, it is known that weld repairs and their associated stress fields often serve as points of initiation for inservice degradation mechanisms (*e.g.*, intergranular stress corrosion cracking, primary water stress corrosion cracking, etc.). Hence, it is in the best interest of the long term safe operation of components being placed into service to eliminate the need for weld repairs where they are not necessary to correct fabrication problems, which will not challenge the operability of the component over its service lifetime. This can be achieved by permitting licensees to effectively utilize the flaw evaluation rules of IWB–3600 and IWC–3600, which are already accepted for the analysis of indications due to inservice degradation.

4. It is important to note that any preservice flaw that has been evaluated as acceptable is required to receive successive examinations under IWB–2420(b) or IWC–2420(c) so if the flaw does grow, it will be detected during these examinations. [ASME 5–14]

NRC Response: The NRC disagrees with this comment, in part. The NRC has recognized that the provisions in Code Case N–813 are identical to changes made in the 2013 Edition of the ASME BPV Code, Section XI. The NRC addressed the contents of the 2013 Edition of the ASME BPV Code, including the Code provisions identical to those allowed in Code Case N–813, in a separate rulemaking.

The NRC recognizes that operating experience has shown that repairing a weld that contains fabrication defects may cause the defect to grow in the future. On the other hand, permitting a weld that contains a known unacceptable fabrication defect prior to deployment is not appropriate and is contrary to the fundamental engineering principle of a good design. The fundamental engineering design is that a component should not contain defects before placing it into service. The staff has accepted the provision of ASME BPV Code, Section III that permits acceptable flaws (*i.e.*, small insignificant flaws) in a weld to exist before deployment. The staff's objection to Code Case N–813 is that the code case permits the existence of unacceptable flaws, which do not meet the ASME Code preservice acceptance criteria, in welds before their deployment. The code case allows these unacceptable flaws to be accepted by analytical evaluation. The code case places no limits on such flaws (*i.e.*, a weld could have more than one unacceptable flaw or numerous welds within a piping run could have flaws that did not meet the preservice acceptance criteria), whereas the original fleet of nuclear plants had no unacceptable preservice flaws. The staff concludes that it cannot approve Code Case N–813 in this rulemaking. The NRC will continue to evaluate operating experience relative to this type of flaw to further inform decisions on possible approval of this code case in future rulemakings.

No change was made to the final rule as a result of this comment.

Code Case N–818

Comment: Code Case N–818 should be removed from Regulatory Guide 1.193 and be allowed for use, as the reasons given in Regulatory Guide 1.193 to disallow Code Case N–818 have the following issues: (a) The fact that the examination will be difficult should not be a reason to prohibit it as Mandatory Appendix I requires that the technique(s) to be applied for the volumetric procedure be demonstrated on specimens simulating geometric, material and surface conditions to be encountered during implementation. (b) The discussion that ultrasound may have difficulties discerning between planar and volumetric flaws is not relevant. There is no requirement in the Code Case to characterize the flaw by type (*i.e.,* planar or volumetric). (c) The suggestion that its application should be limited to ferritic weldments defeats the purpose of Code Case N–818. [EPRI 2–5, Southern 4–4]

NRC Response: The NRC disagrees with this comment, in part. At present, the NRC has not received any supporting documents from the industry to address the NRC's concern regarding this Code Case, such as a demonstration of the adequacy of a full volume ultrasonic examination for fabrication flaws in austenitic welds. Therefore, the wording of the reasons given in RG 1.193 should not refer to the inspection being difficult for austenitic materials and dissimilar metal welds, but should instead refer to there not being an established technical basis for the use of ultrasound to find fabrication flaws in these materials. Additionally, the discussion of planar vs. volumetric flaws will be removed from RG 1.193, as the Code Case does not require the examiner to discriminate between these types of flaws. The revised wording for RG 1.193 is:

> The NRC has been conducting research at Pacific Northwest National Laboratory on the examination of austenitic and ferritic welds. The work has shown that performing a full volume ultrasonic examination for fabrication flaws is significantly different from an inservice examination. For example, examination from two directions is necessary to detect certain circumferentially oriented fabrication flaws such as lack of fusion. The work has also shown that the second leg of a V-path can be applied to examine ferritic materials on a limited basis but to date the technical basis has not been established to show that these techniques will be effective on austenitic materials and dissimilar metal welds. Another finding is that surface conditions are critical with respect to detecting and characterizing fabrication flaws. In summary, the NRC finds that an analytical approach for the acceptance of certain fabrication flaws could be acceptable if appropriately justified and the scope limited to ferritic materials. The NRC finds that significant research will be required to demonstrate that full-volume ultrasonic examination for fabrication flaws is acceptable for austenitic and dissimilar metal welds.

Regulatory Guide 1.192, Revision 2 (DG–1297)

Code Case OMN–20

Comment: Allow the use of Code Case OMN–20 for those plants that implement ASME OM Code 2015 Edition and earlier editions and addenda. [Gowin 6–1]

NRC Response: The NRC agrees, in part, with this comment. Code Case OMN–20 cannot be implemented with the 2015 Edition of the ASME OM Code because the 2015 Edition has not been incorporated by reference into § 50.55a. Code Case OMN–20 is currently applicable to the 2009 Edition through the OMa–2011 Addenda and all earlier editions and addenda. Licensees who adopt the 2012 Edition of the ASME OM Code would not be able to use Code Case OMN–20, without submitting a relief request to the NRC for approval. For this reason, the NRC partially agrees with the comment. The NRC believes that Code Case OMN–20 should be allowed to be implemented with the 2012 Edition and earlier editions and addenda of the ASME OM Code. The RG 1.192 was updated to add a condition stating that Code Case OMN–20 is applicable to the editions and addenda of the ASME OM Code listed in § 50.55a(a)(1)(iv).

No change was made to the final rule as a result of this comment.

Public Comments on the Proposed Rule

Comment: The ASME Code is updated every year. Preparations are underway to publish the 2017 edition. NRC is working on 2010 Edition. It appears that NRC is not in compliance with National Technology Transfer and Advancement Act of 1995 (NTTAA) by passive non-compliance. Since NRC has many participants in the Code process, they should be prepared to act as soon as final standards votes are counted. [Donavin 1–1]

NRC Response: The NRC disagrees with this comment. The NRC appreciates the ASME's efforts to consider the NRC's concerns as addressed in conditions to § 50.55a. The NRC agrees that delays in approving new ASME Code editions and Code Cases can be counterproductive with respect to implementation of improvements in ASME Code requirements. The NRC continues to assess ways to improve the rulemaking process to find schedule efficiencies.

No change was made to the final rule as a result of this comment.

Comment: Many of the conditions are historical and are the result of a single reviewer's opinion. An example is the rules for the 1994 edition where I watched an NRC reviewer living in Washington, DC telling a PhD from Tokyo, Japan, that his seismic analysis defending the edition was non conservative. If there are legitimate questions, these should be separated from the ''not sufficiently conservative'' or ''insufficient information'' justifications. The Commission has set a precedent in CVR for SECY–15–0106. ASME has endeavored to address conditions with docketed letters and Code actions. [Donavin 1–2]

NRC Response: The NRC disagrees with this comment. Although a single reviewer may state a contrary position, NRC reviews all Code Cases and comments with appropriate staff and management. Code Cases that the NRC finds to be conditionally acceptable are also listed in RGs 1.84, 1.147, and 1.192, which are the subject of this rulemaking, together with the conditions that must be used if the Code Case is applied. The NRC determined that this rule complies with the NTTAA and OMB Circular A–119, despite these conditions. If the NRC did not conditionally accept ASME Code Cases, it would disapprove these Code Cases entirely.

No change was made to the final rule as a result of this comment.

Comment: ASME believes that it is not clear whether the word ''superseded'' applies to those Code Cases that are superseded by ASME or those Code Cases that are listed as superseded in Table 5 of Regulatory Guide 1.147.

ASME recommends revising the second sentence of this paragraph to clarify that ''The older or superseded version of the Code Case, if listed in Table 5, cannot be applied by the licensee or applicant for the first time.'' [ASME 5–1]

NRC Response: The NRC agrees with this comment. The proposed additional text will add clarity to the information presented in Table 5. The final RG 1.147 in the introductory paragraph to Table 5, has been revised to include the statement, ''The older or superseded version of the Code Case, if listed in Table 5, cannot be applied by the licensee or applicant for the first time.'' at the end of the explanatory text above Table 5.

No change was made to the final rule as a result of this comment.

Comment: The Code Case [N–711] would permit each licensee to independently determine when achievement of a coverage requirement is impractical, and when Code-required coverage is satisfied. As a result, application of the Code Case for similar configurations at different plants could result in potentially significant quantitative variations. Furthermore, application of the Code Case is inconsistent with NRC's responsibility for determining whether examinations are impractical, and eliminates the NRC's ability to take exception to a licensee's proposed action and impose additional measures where warranted in accordance with 10 CFR 50.55a(g)(6)(i).

ASME recommends that this case be removed from RG 1.193, Table 2 and added to Table 2 of RG 1.147 with appropriate conditions to address NRC technical concerns with the use of this case. [ASME 5–10]

NRC Response: The NRC agrees with this comment. However, this is a new proposal and cannot be included in this rulemaking because it was not provided for public comment. Rather than include the action in this rulemaking, the NRC intends to include it within the scope of the rulemaking that will incorporate by reference the 2015 edition of the ASME BPV Code.

No change was made to the final rule as a result of this comment.

Comment: In Section IV, ''Section-by-Section Analysis'' of the Proposed Rule dated March 2, 2016 (**Federal Register** Vol. 81, No. 41), ASME believes that it is not clear whether the word ''superseded'' applies to those Code Cases that are superseded by ASME or those Code Cases that are listed as superseded in Table 5 of Regulatory Guide 1.147 and in Table 5 of Regulatory Guide 1.84. [ASME 5–1 and ASME 5–15]

ASME provides the following recommendations:

i. ASME recommends that the NRC clarify the above concern in the final rule.

ii. ASME recommends that the NRC review requirements for superseded ASME Section III and OM Code Cases in RG 1.84 and RG 1.192 for similar clarification.

NRC Response: The NRC agrees with this comment as noted in the response to Comment 5–1. In addition to that clarifying text being added in the introduction to Table 5 in RG 1.147, it will also be added to the introduction of Table 5 in RG 1.84. The RG 1.192 does not contain a table of superseded Code Cases, therefore, no change will be made to the RG 1.192.

No change was made to the final rule as a result of this comment.

V. Section-by-Section Analysis

The following paragraphs in § 50.55a, which list the three RGs that are being incorporated by reference, are revised as follows:

Paragraphs (a)(3)(i): The reference to ''*NRC Regulatory Guide 1.84, Revision 36,*'' is amended to remove ''Revision 36'' and add in its place ''Revision 37.''

Paragraphs (a)(3)(ii): The reference to ''*NRC Regulatory Guide 1.147, Revision 17,*'' is amended to remove ''Revision 17'' and add in its place ''Revision 18.''

Paragraphs (a)(3)(iii): The reference to ''*NRC Regulatory Guide 1.192, Revision 1,*'' is amended to remove ''Revision 1'' and add in its place ''Revision 2.''

Overall Considerations on the Use of ASME Code Cases

This rulemaking amends § 50.55a to incorporate by reference RG 1.84, Revision 37, which supersedes Revision 36; RG 1.147, Revision 18, which supersedes Revision 17; and RG 1.192, Revision 2, which supersedes Revision 1. The following general guidance applies to the use of the ASME Code Cases approved in the latest versions of the RGs that are incorporated by reference into § 50.55a as part of this rulemaking.

The approval of a Code Case in the NRC RGs constitutes acceptance of its technical position for applications that are not precluded by regulatory or other requirements or by the recommendations in these or other RGs. The applicant and/or licensee are responsible for ensuring that use of the Code Case does not conflict with regulatory requirements or licensee

commitments. The Code Cases listed in the RGs are acceptable for use within the limits specified in the Code Cases. If the RG states an NRC condition on the use of a Code Case, then the NRC condition supplements the Code Case, and does not supersede any condition(s) specified in the Code Case, unless otherwise stated in the NRC condition.

The ASME Code Cases may be revised for many reasons (*e.g.*, to incorporate operational examination and testing experience and to update material requirements based on research results). On occasion, an inaccuracy in an equation is discovered or an examination, as practiced, is found not to be adequate to detect a newly discovered degradation mechanism. Hence, when an applicant or a licensee initially implements a Code Case, § 50.55a requires that the applicant or the licensee implement the most recent version of that Code Case, as listed in the RGs incorporated by reference. Code Cases superseded by revision are no longer acceptable for new applications, unless otherwise indicated.

Section III of the ASME BPV Code applies only to new construction (*i.e.*, the edition and addenda to be used in the construction of a plant are selected based on the date of the construction permit and are not changed thereafter, except voluntarily by the applicant or the licensee). Hence, if a Section III Code Case is implemented by an applicant or a licensee and a later version of the Code Case is incorporated by reference into § 50.55a and listed in the RGs, the applicant or the licensee may use either version of the Code Case (subject, however, to whatever change requirements apply to its licensing basis (*e.g.*, 10 CFR 50.59)).

A licensee's ISI and IST programs must be updated every 10 years to the latest edition and addenda of Section XI and the OM Code, respectively, that were incorporated by reference into § 50.55a and in effect 12 months prior to the start of the next inspection and testing interval. Licensees who were using a Code Case prior to the effective date of its revision may continue to use the previous version for the remainder of the 120-month ISI or IST interval. This relieves licensees of the burden of having to update their ISI or IST program each time a Code Case is revised by the ASME and approved for use by the NRC. Code Cases apply to specific editions and addenda, and Code Cases may be revised if they are no longer accurate or adequate, so licensees choosing to continue using a Code Case during the subsequent ISI or IST interval must implement the latest version incorporated by reference into § 50.55a and listed in the RGs.

The ASME may annul Code Cases that are no longer required, are determined to be inaccurate or inadequate, or have been incorporated into the BPV or OM Codes. If an applicant or a licensee applied a Code Case before it was listed as annulled, the applicant or the licensee may continue to use the Code Case until the applicant or the licensee updates its construction Code of Record (in the case of an applicant, updates its application) or until the licensee's 120-month ISI or IST update interval expires, after which the continued use of the Code Case is prohibited, unless NRC authorization is given under § 50.55a(z). If a Code Case is incorporated by reference into § 50.55a and later annulled by the ASME because experience has shown that the design analysis, construction method, examination method, or testing method is inadequate, the NRC will amend § 50.55a and the relevant RG to remove the approval of the annulled Code Case. Applicants and licensees should not begin to implement such annulled Code Cases in advance of the rulemaking.

A Code Case may be revised, for example, to incorporate user experience. The older or superseded version of the Code Case cannot be applied by the licensee or applicant for the first time.

If an applicant or a licensee applied a Code Case before it was listed as superseded, the applicant or the licensee may continue to use the Code Case until the applicant or the licensee updates its Construction Code of Record (in the case of an applicant, updates its application) or until the licensee's 120-month ISI or IST update interval expires, after which the continued use of the Code Case is prohibited, unless NRC authorization is given under § 50.55a(z). If a Code Case is incorporated by reference into § 50.55a and later a revised version is issued by the ASME because experience has shown that the design analysis, construction method, examination method, or testing method is inadequate; the NRC will amend § 50.55a and the relevant RG to remove the approval of the superseded Code Case. Applicants and licensees should not begin to implement such superseded Code Cases in advance of the rulemaking.

VI. Regulatory Flexibility Certification

Under the Regulatory Flexibility Act, 5 U.S.C. 605(b), the NRC certifies that this rule does not have a significant economic impact on a substantial number of small entities. This final rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of ''small entities'' set forth in the Regulatory Flexibility Act or the size standards established by the NRC (§ 2.810).

VII. Regulatory Analysis

The NRC has prepared a final regulatory analysis on this regulation. The analysis examines the costs and benefits of the alternatives considered by the NRC. The total estimated net benefit of this rule is $4.94 million (7% discount rate) and $5.68 million (3% discount rate). The regulatory analysis is available as indicated in the ''Availability of Documents'' section of this document.

VIII. Backfitting and Issue Finality

The provisions in this rule allow licensees and applicants to voluntarily apply NRC-approved Code Cases, sometimes with NRC-specified conditions. The approved Code Cases are listed in the three RGs that are incorporated by reference into § 50.55a.

An applicant's or a licensee's voluntary application of an approved Code Case does not constitute backfitting, inasmuch as there is no imposition of a new requirement or new position. Similarly, voluntary application of an approved Code Case by a 10 CFR part 52 applicant or licensee does not represent NRC imposition of a requirement or action that is inconsistent with any issue finality provision in 10 CFR part 52. The NRC finds that this rule does not involve any provisions requiring the preparation of a backfit analysis or documentation demonstrating that one or more of the issue finality criteria in 10 CFR part 52 are met.

IX. Plain Writing

The Plain Writing Act of 2010 (Pub. L. 111–274) requires Federal agencies to write documents in a clear, concise, and well-organized manner. The NRC has written this document to be consistent with the Plain Writing Act as well as the Presidential Memorandum, ''Plain Language in Government Writing,'' published June 10, 1998 (63 FR 31883).

X. Environmental Assessment and Final Finding of No Significant Environmental Impact

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in subpart A of 10 CFR part 51, that this rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment; therefore, an

environmental impact statement is not required.

The determination of this environmental assessment is that there will be no significant effect on the quality of the human environment from this action. As alternatives to the ASME Code, NRC-approved Code Cases provide an equivalent level of safety. Therefore, the probability or consequences of accidents is not changed. There are also no significant, non-radiological impacts associated with this action because no changes would be made affecting non-radiological plant effluents and because no changes would be made in activities that would adversely affect the environment. The determination of this environmental assessment is that there will be no significant offsite impact to the public from this action.

XI. Paperwork Reduction Act

This final rule contains new or amended collections of information subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). The collection of information was approved by the Office of Management and Budget (approval number 3150–0011).

The burden to the public for these information collections is estimated to average a reduction of 380 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection.

The information collection is being conducted to document the plans for and the results of inservice inspection and inservice testing programs. The records are generally historical in nature and provide data on which future activities can be based. The practical utility of the information collection for the NRC is that appropriate records are available for auditing by NRC personnel to determine if ASME BPV and OM Code provisions for construction, inservice inspection, repairs, and inservice testing are being properly implemented in accordance with § 50.55a of the NRC regulations, or whether specific enforcement actions are necessary. Responses to this collection of information are generally mandatory under § 50.55a.

You may submit comments on any aspect of the information collection(s), including suggestions for reducing the burden, by the following methods:

- *Federal Rulemaking Website:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2012–0059.
- *Mail comments to:* Information Services Branch, Office of the Chief Information Officer, Mail Stop: T–2 F43, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001 or to Aaron Szabo, Desk Officer, Office of Information and Regulatory Affairs (3150–0011), NEOB–10202, Office of Management and Budget, Washington, DC 20503; telephone 202–395–3621, email: *oira_submission@omb.eop.gov.*

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement, unless the requesting document displays a currently valid OMB control number.

XII. Congressional Review Act

This final rule is a rule as defined in the Congressional Review Act (5 U.S.C. 801–808). However, the Office of Management and Budget has not found it to be a major rule, as defined in the Congressional Review Act.

XIII. Voluntary Consensus Standards

The National Technology Transfer and Advancement Act of 1995, Public Law 104–113, requires that Federal agencies use technical standards that are developed or adopted by voluntary consensus standards bodies, unless using such a standard is inconsistent with applicable law or is otherwise impractical. In this rule, the NRC is continuing to use ASME BPV and OM Code Cases, which are ASME-approved alternatives to compliance with various provisions of the ASME BPV and OM Codes. The NRC's approval of the ASME Code Cases is accomplished by amending the NRC's regulations to incorporate by reference the latest revisions of the following, which are the subject of this rulemaking, into § 50.55a: RG 1.84, Revision 37; RG 1.147, Revision 18; and RG 1.192, Revision 2. These RGs list the ASME Code Cases that the NRC has approved for use. The ASME Code Cases are national consensus standards, as defined in the National Technology Transfer and Advancement Act of 1995 and OMB Circular A–119. The ASME Code Cases constitute voluntary consensus standards, in which all interested parties (including the NRC and licensees of nuclear power plants) participate.

XIV. Incorporation by Reference—Reasonable Availability to Interested Parties

The NRC is incorporating by reference three NRC Regulatory Guides that list new and revised ASME Code Cases, which the NRC has approved as alternatives to certain provisions of NRC-required Editions and Addenda of the ASME BPV Code and the ASME OM Code.

The NRC is required by law to obtain approval for incorporation by reference from the Office of the Federal Register (OFR). The OFR's requirements for incorporation by reference are set forth in 1 CFR part 51. On November 7, 2014, the OFR adopted changes to its regulations governing incorporation by reference (79 FR 66267). The OFR regulations require an agency to include, in a proposed rule, a discussion of the ways that the materials the agency proposes to incorporate by reference are reasonably available to interested parties or how it worked to make those materials reasonably available to interested parties. The discussion in this section complies with the requirement for final rules, as set forth in 1 CFR 51.5(b).

The NRC considers ''interested parties'' to include all potential NRC stakeholders, not only the individuals and entities regulated or otherwise subject to the NRC's regulatory oversight. These NRC stakeholders are not a homogenous group, so the considerations for determining ''reasonable availability'' vary by class of interested parties. The NRC identifies six classes of interested parties with regard to the material to be incorporated by reference in an NRC rule:

- Individuals and small entities regulated or otherwise subject to the NRC's regulatory oversight. This class includes applicants and potential applicants for licenses and other NRC regulatory approvals, and who are subject to the material to be incorporated by reference. In this context, ''small entities'' has the same meaning as set out in § 2.810.
- Large entities otherwise subject to the NRC's regulatory oversight. This class includes applicants and potential applicants for licenses and other NRC regulatory approvals, and who are subject to the material to be incorporated by reference. In this context, a ''large entity'' is one which does not qualify as a ''small entity'' under § 2.810.
- Non-governmental organizations with institutional interests in the matters regulated by the NRC.
- Other Federal agencies, states, local governmental bodies (within the meaning of § 2.315(c)).
- Federally-recognized and State-recognized [7] Indian tribes.

[7] State-recognized Indian tribes are not within the scope of 10 CFR 2.315(c). However, for purposes of the NRC's compliance with 1 CFR 51.5, ''interested

• Members of the general public (*i.e.*, individual, unaffiliated members of the public who are not regulated or otherwise subject to the NRC's regulatory oversight) and who need access to the materials that the NRC proposes to incorporate by reference in order to participate in the rulemaking.

The three regulatory guides being incorporated by reference in this rule are available without cost and can be read online, downloaded, or viewed, by appointment, at the NRC Technical Library, which is located at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland 20852; telephone: 301–415–7000; e-mail: *Library.Resource@nrc.gov; url: www.nrc.gov/reading-rm/doc-collections/*.

Because access to the three regulatory guides are available in various forms and at no cost, the NRC determines that the three regulatory guides, RG 1.84, Revision 37; RG 1.147, Revision 18; and RG 1.192, Revision 2, once approved by the OFR for incorporation by reference, are reasonably available to all interested parties.

XV. Availability of Documents

The documents identified in the following table are available to interested persons through one or more of the following methods, as indicated.

TABLE IV—RULEMAKING RELATED DOCUMENTS

Document title	ADAMS accession No./ **Federal Register** citation/web link
Proposed Rule Documents:	
Proposed Rule—**Federal Register** notice, March 2, 2016	81 FR 10780.
Draft Regulatory Analysis	ML15041A816.
Draft RG 1.84, Revision 37 (DG–1295)	ML15027A002.
Draft RG 1.147, Revision 18 (DG–1296)	ML15027A202.
Draft RG 1.192, Revision 2 (DG–1297)	ML15027A330.
Final Rule Documents:	
Regulatory Analysis	ML16285A013.
RG 1.84, Revision 37	ML16321A335.
RG 1.147, Revision 18	ML16321A336.
RG 1.192, Revision 2	ML16321A337.
Related Documents:	
Draft RG 1.193, ''ASME Code Cases Not Approved for Use,'' Revision 5. (DG–1298)	ML15028A003.
Federal Register notice—''Incorporation by Reference of American Society of Mechanical Engineers Codes and Code Cases,'' July 18, 2017.	82 FR 32934.
Federal Register notice—''Incorporation by Reference of American Society of Mechanical Engineers Codes and Code Cases,'' September 18, 2015.	80 FR 56820.
Federal Register notice—''Incorporation by Reference of ASME BPV and OM Code Cases,'' July 8, 2003.	68 FR 40469.
Federal Register notice—''Fracture Toughness Requirements for Light Water Reactor Pressure Vessels,'' December 19, 1995.	60 FR 65456.
Information Notice No. 98–13, ''Post-Refueling Outage Reactor Pressure Vessel Leakage Testing Before Core Criticality,'' April 20, 1998.	ML031050237.
Inspection Report 50–254/97–27	ML15216A276.
Letter from James M. Taylor, Executive Director for Operations, NRC, to Messrs. Nicholas S. Reynolds and Daniel F. Stenger, Nuclear Utility Backfitting and Reform Group, February 2, 1990.	ML14273A002.
Materials Reliability Project Report MRP–169 Technical Basis for Preemptive Weld Overlays for Alloy 82/182 Butt Welds in PWRs (Revision 1), EPRI, Palo Alto, CA: 2012. 1025295.	ML101660468.
NUREG/CR–6933, ''Assessment of Crack Detection in Heavy-Walled Cast Stainless Steel Piping Welds Using Advanced Low-Frequency Ultrasonic Methods''.	ML071020409.
White Paper, PVP2012–78190, ''Alternative Acceptance Criteria for Flaws in Ferritic Steel Components Operating in the Upper Shelf Temperature Range,'' 2012.	*http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleid=1723450*.
White Paper PVP2015–45307, ''Options for Defining the Upper Shelf Transition Temperature (*Tc*) for Ferritic Pressure Vessel Steels,'' 2015.	*http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleid=2471884*.

List of Subjects in 10 CFR Part 50

Administrative practice and procedure, Antitrust, Classified information, Criminal penalties, Education, Fire prevention, Fire protection, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalties, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements, Whistleblowing.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 552 and 553, the NRC is adopting the following amendments to 10 CFR part 50:

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

■ 1. The authority citation for part 50 continues to read as follows:

Authority: Atomic Energy Act of 1954, secs. 11, 101, 102, 103, 104, 105, 108, 122, 147, 149, 161, 181, 182, 183, 184, 185, 186, 187, 189, 223, 234 (42 U.S.C. 2014, 2131, 2132, 2133, 2134, 2135, 2138, 2152, 2167, 2169, 2201, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2239, 2273, 2282); Energy

parties'' includes a broad set of stakeholders including State-recognized Indian tribes.

Reorganization Act of 1974, secs. 201, 202, 206, 211 (42 U.S.C. 5841, 5842, 5846, 5851); Nuclear Waste Policy Act of 1982, sec. 306 (42 U.S.C. 10226); National Environmental Policy Act of 1969 (42 U.S.C. 4332); 44 U.S.C. 3504 note; Sec. 109, Pub. L. 96–295, 94 Stat. 783.

■ 2. In § 50.55a, revise paragraphs (a)(3)(i) through (iii) to read as follows:

§ 50.55a Codes and standards.

(a) * * *

(3) * * *

(i) *NRC Regulatory Guide 1.84, Revision 37.* NRC Regulatory Guide 1.84, Revision 37, ''Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,'' dated March 2017, with the requirements in paragraph (b)(4) of this section.

(ii) *NRC Regulatory Guide 1.147, Revision 18.* NRC Regulatory Guide 1.147, Revision 18, ''Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,'' dated March 2017, which lists ASME Code Cases that the NRC has approved in accordance with the requirements in paragraph (b)(5) of this section.

(iii) *NRC Regulatory Guide 1.192, Revision 2.* NRC Regulatory Guide 1.192, Revision 2, ''Operation and Maintenance Code Case Acceptability, ASME OM Code,'' dated March 2017, which lists ASME Code Cases that the NRC has approved in accordance with the requirements in paragraph (b)(6) of this section.

* * * * *

Dated at Rockville, Maryland, this 2nd day of August 2017.

For the Nuclear Regulatory Commission.

Brian E. Holian,

Acting Director, Office of Nuclear Reactor Regulation.

Editorial note: This document was received for publication by the Office of the Federal Register on January 3, 2018.

[FR Doc. 2018–00112 Filed 1–16–18; 8:45 am]

BILLING CODE P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2017–0324; Product Identifier 2017–CE–004–AD; Amendment 39–19157; AD 2018–02–04]

RIN 2120–AA64

Airworthiness Directives; Aerospace Welding Minneapolis, Inc., Mufflers

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain Aerospace Welding Minneapolis, Inc. mufflers, part numbers A1754001–23 and A1754001–25, installed on airplanes. This AD was prompted by occurrences of cracks or broken welds in the connecting weld of the muffler body to muffler cuff that may allow carbon monoxide exhaust fumes into the cockpit heating system. This AD requires an inspection of the muffler for leaking to identify cracks and replacement of the muffler. We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective February 21, 2018.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of February 21, 2018.

ADDRESSES: For service information identified in this final rule, contact Aerospace Welding Minneapolis, Inc. (AWI) 1045 Gemini Road, Eagan, Minnesota 55121; telephone: 651–379–9888; fax: 651–379–9889; internet: *www.awi-ami.com.* You may view this service information at the FAA, Policy and Innovation Division, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329–4148. It is also available on the internet at *http://www.regulations.gov* by searching for and locating Docket No. FAA–2017–0324.

Examining the AD Docket

You may examine the AD docket on the internet at *http://www.regulations.gov* by searching for and locating Docket No. FAA–2017–0324; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800–647–5527) is Docket Operations, U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Mark Grace, Aerospace Engineer, FAA, Chicago ACO Branch, 2300 East Devon Avenue, Des Plaines, IL 60018–4696; telephone: (847) 294–7377; fax: (847) 294–7834; email: *mark.grace@faa.gov.*

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain Aerospace Welding Minneapolis, Inc. (AWI) mufflers, part numbers A1754001–23 and A1754001–25, installed on airplanes. The NPRM published in the **Federal Register** on April 18, 2017 (82 FR 18265). The NPRM was prompted by reports of broken or cracked welds in the connecting weld of the muffler body to muffler cuff. There have been 54 occurrences identified by maintenance and 2 occurrences identified by the carbon monoxide (CO) gas monitor warning system. The NPRM proposed to require an inspection of the muffler for leaking to identify cracks and replacement of the muffler. We are issuing this AD to correct the unsafe condition on these products.

Comments

We gave the public the opportunity to participate in developing this final rule. The following presents the comments received on the NPRM and the FAA's response to each comment.

Request To Expand the Applicability

An anonymous commenter requested we expand the applicability of the AD to include additional part number mufflers produced by the same manufacturer as the mufflers affected by this AD. The commenter thinks the additional part number mufflers may share some of the same materials, processes, and methods of assembly as the mufflers affected by this AD.

We do not agree with this comment. We addressed this concern during the investigation of the unsafe condition. We found that the unsafe condition is related to a design change and was applicable to one manufacturing lot. The unsafe condition applies to only the part numbers and serial numbers affected by this AD.

We have not changed this AD based on this comment.

Request To Prohibit the Installation of the Affected Muffler on Cessna 172R and 172S Airplanes

An anonymous commenter pointed out that that all 10 SDRs address the Models 172R and 172S airplanes. This commenter also asks how many of the 56 parts were installed on Cessna Models C172R and C172S airplanes. The commenter explains that (AWI) mufflers, part numbers A1754001–23 and A1754001–25, lack the reinforced ends and high temperature corrosion resistant material specified in FAR Part 23.1125(a)(1). The material substitution